

THE
AMERICAN FARMER:
DEVOTED TO
Agriculture, Horticulture, and Rural Economy.

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"O FORTUNATOS NIMIUM SUA SI BONA NORINT
"AGRICOLAS." *Virg.*

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DECEMBER.

"White ermine now the mountains wear,
To shield their naked shoulders bare.

The dark pine wears the snow, as head
Of Æthiop doth white turban wear.

The floods are armed with silver shields,
Through which the Sun's sword cannot fare:

To mutter 'twixt their teeth the streams,
In icy fetters, scarcely dare.

Hushed is the busy hum of life;
'Tis silence in the earth and air."

♦♦♦
Gossip from the Farm.

GOOD FARMER: This month of November is a month of elections, and all the country is alive with politics. What shall a countryman say then, if something he must say, and shun the ground, for your pages, forbidden. He may record a fact which is very remarkable now, and in long years coming will interest such readers as may be conning the record of the past in your then musty pages; it is this, that in this good old State of Maryland, every county, every town, every ward, has cast its vote the same way—electing Governor and every State Official, every Senator, every Member of Assembly, every Judge, every Attorney, every Clerk and Register, all Sheriffs, County Commissioners, Mayor and City Councilmen of Baltimore—all without exception of that side that, in the belief of her people, means kindness and good will and sympathy and love for our afflicted and helpless brethren of the South.

Let it be hoped that it is a harbinger that all division of sentiment on matters vital to their

interest will soon cease, and that the whole country will ere long be devoted to the interests of peace. Not until then can the material interest of Southern Agriculture, on which all other interests are based, be restored to that point from which it may take a start on a new career of prosperity. The mind of the Southern people is ready for this work, whenever the complications and embarrassments of their political condition shall allow it.

Within a year past the people of Maryland have spent a million of money to feed the hungry and clothe the naked of the States of the South. The voice of protest against their political wrongs which sounds unbroken from the tops of her Alleghanies to the shores of the Ocean, has a moral worth which is of more value than food and clothing. Yours, truly, &c.

♦♦♦
Work for the Month.

The work for this month on the farm is the closing up the operations of the season generally, and making all those necessary preparations, yet unfinished, which conduce to the comfort and well-being of all within the circle of the farmer's care.

CORN CROP.

The corn should now be got under lock and key as quickly as possible. It is by this time sufficiently cured, and is every day, as the season advances, more liable to depredations. The careful manager will always inform himself of the number of barrels put away, and of the quantity already fed to hogs and other stock, and thus ascertain as nearly as possible the yield per acre. The young farmer who will, every season, care-

fully estimate his crop by its appearance as it stands in the field, and then pass it through the corn barrel, will soon be able, by such practice in this and other crops, to form a correct judgment of the value of land by the growing crops, besides having the advantage of knowing at every step of his business, just what he is doing. The corn shucks make a valuable fodder, and should be well preserved under cover.

CARE OF STOCK.

We have spoken repeatedly of the care of stock at this season. No time should now be lost in making all necessary provision. It is too much the practice to allow store cattle to shift for themselves in the fields to so late a period that they begin to lose flesh before the regular winter feeding in the yard begins. This is very bad economy. Experience amply shows that cattle kept well to their flesh in this month are much more economically fed through the winter, than when allowed to fall off as they soon will do, to a point inconsistent with vigorous health. Cows that are to calve in spring are particularly liable to suffer seriously, and their lives are often endangered by this sort of carelessness.

Work Horses.—Work horses and mules, if they have work to do now, need more than usual care. Let them have ample stable room and bedding. Let them never be put up without being rubbed dry, and their feet and legs cleaned.

Working Oxen.—These should always be fed apart from other cattle. When not at work they will drive off the weaker stock from their food, and when kept out of the yard at work they will suffer in turn by having their rations interfered with.

Cows.—Such as are to furnish milk through the winter should be as well tended as a riding or driving horse, with warm shelter, good bed, perfect cleanliness, with bran and cornmeal, and sugar beet or ruta бага. A good cow pays well for the best attention. Cows in calf should be comfortable and very quiet. Do not make them very fat, but keep them in strong condition.

Calves.—Calves weaned should be provided with shelter open to south and east, and have best hay or corn fodder, with little bran or meal daily, if you would have them continue to grow. Do not suppose it necessary that young animals should cease growing now, and take two or three months of spring to fill up their wasted dimensions, before starting for another season's growth. They need not be forced, but let them not lose a day of growth.

Sheep.—Sheep should have open shelter, and racks and troughs for feeding. Such as are

being fed for the butcher may be confined to their pens, provided they be fattened off as quickly as possible and are amply littered. Store sheep should have full liberty in all good weather.

Hogs.—Continue the feeding of hogs for slaughter, as heretofore directed, until you get rid of them. Give them a little salt occasionally, or corn soaked in salt water, and charcoal or rotted wood, and let them be very quiet. In slaughtering do not indulge servants in the brutal practice of bleeding them to death, without first striking on the head; nor do not allow them to be raced around in catching them for slaughter.—Such practice is injurious to the quality of the meat. Store hogs should be kept in thrifty condition, and not allowed to sleep about manure heaps, or other filthy places. A bed of leaves on a wooded hill-side to the south, is best for them.

Water.—Have water in your yards if possible. The purest is the rain water from a clean roof, and it costs little to have a cistern and pump.

TOBACCO.

Whenever the tobacco is soft enough to admit of being handled without breaking, the work of stripping off the leaves and tying, in preparation for market, should be carried on with no loss of time. Early in the season, a press of other work is very apt to cause the stripping to be postponed, and if the crop be a large one, the getting ready for market is too long delayed. Great care should be observed in the proper sorting and handling. On each plant there will be usually three or four sorts, which should be put each in its separate allotment. In taking down the crop for stripping, do not allow the sticks to be thrown to the ground, but handed down with care. The bundles are to be neatly tied, and then while held in one hand, pressed by the other against the breast of the stripper into the shape it is intended to have when taken out of the hoghead for inspection. It shows better when pressed into a fan-like shape. This is very quickly done by passing the hand over it; then the bundle is to be laid down with care, not thrown down. It is an easy matter to make it keep this shape throughout the preparation for market. The value of the crop is much enhanced by neatness in handling it, and attention to such little matters begets a habit of care very essential to the successful planter. On the close of a day's work all done during the day is to be laid in bulks of two rows, with the tails somewhat lapping, and with no weight upon it but a few tobacco sticks. The floor of the house is to be cleared up, the sticks put out of the way, and the tobacco stalks preserved under cover. It is

a common practice, and a most wasteful one, to throw them out of the door, and expose them to the washing from the roof. From an estimate made with some care, we have found the stalks from twenty acres of tobacco worth for manure about as much as a ton of Peruvian guano.

PLOUGHING.

Continue the ploughing of such stiff land as may be benefitted by exposure to frost. We do not recommend fall ploughing except in that case. It is allowable too for the sake of putting forward the spring work.

CURING HAMS.

Among the suggestions proper to the season, we should not omit the curing properly the bacon we have fattened with so much cost. The following recipe will make as good bacon as any one may wish to eat:

For one hundred pounds of meat, take six gallons of water, nine pounds of salt, half fine and half coarse, three pounds of brown sugar, one quart of molasses, three ounces of saltpetre, and one ounce of potash. Boil and skim it well, and let it stand until entirely cold; then, having rubbed your meat with fine salt, pour this brine over it; let it remain six weeks, and then hang up and smoke.

The Vegetable Garden.

Prepared for the American Farmer, by DANIEL BARKER, Maryland Agricultural College.

DECEMBER.

The work to be done this month will depend upon the state of the weather. Should it be damp and wet, keep off the ground by all means. If frosty, much work can and ought to be attended to. All the cabbage tribe should be protected, if necessary. Turnips and potatoes should be taken in and placed in the root cellar or other convenient place. Haul on manure, plough and spade up every piece of vacant ground, whenever the weather will permit. The advantages gained by these operations are very great, particularly where the soil is of a clayey nature. During hard frost, the manure for the whole spring cropping should be hauled out, laying it in heaps either on the spots where it is to be used, or as near to them as possible. What cannot be used immediately should be laid in heaps and be covered with soil to prevent evaporation.

ASPARAGUS.—Where there are conveniences for forcing this delicious vegetable, now is a good season to take up the root for that pur-

pose. The most convenient plan is to transfer it to a hot bed provided with a moderate bottom heat, by placing about one foot of fresh stable manure and leaves at the bottom, covering with about six inches of soil, upon which place the plant in close proximity, covering the crown with light soil, and allowing as much sunlight and air as possible—thus an abundant supply of this most useful vegetable may be obtained.

CELERY.—Take advantage of every favorable opportunity of earthing up the late crops, both for the purpose of blanching and protecting it.

ENDIVE.—Can be much easier kept and in better condition by being taken up from the open ground and placed in frames, or any open, airy shed, where it can be protected by a covering of straw.

CAULIFLOWERS.—In frames will require all the air possible in favorable weather, and to be kept free from weeds and decayed leaves. If any are planted in pots for the purpose of protecting them during severe weather, they should be carefully attended to with water, otherwise in spring they will be found useless.

LETTUCE.—Those in frames for present use should be kept dry and free from weeds and dead leaves. The young ones also in frames should have all the air that can be given them in fine weather. Keep them, as well as those in borders, free from litter of all sorts which is likely to harbor slugs.

ONIONS.—Look over those which are stored, and turn them over, seeing that they are all sound; remove all that are beginning to decay.

POTATOES.—Should be looked over where they are placed in a cellar, and all mouldy and decayed ones picked out.

RHUBARB.—Take up and pot roots for forcing, if a succession is required; or they may be placed in a warm cellar and slightly covered with soil.

SPINACH.—In picking the leaves off winter spinach, great care should be taken not to bruise or injure those that remain, as at this season a bruise invariably leads to decay. Every leaf should be picked singly.

The Fruit Garden.

Orchard trees of large size are much neglected in many places, the heads being allowed to become too thick of wood, so that fruit cannot be expected but from the points of the outside shoots, and unless trimmed out by accident, the fruit considerably below an average crop, moreover, being small and very indifferent in quality. The pruning of all sorts of fruit trees, except

peaches, should now be vigorously prosecuted. Leave nothing to the spring which can be done now. Every day gained now will give greater liberty for the many pressing operations in the spring.

Prune all currant and gooseberry bushes, clear off the prunings, and have the ground manured ready for spading or ploughing.

Let standard trees which were removed during the fall, or root pruned, be well secured against winds, and should the weather remain favorable, let all root pruning and transplanting remaining to be done be executed without delay. The roots of all newly planted trees should be protected by mulching.

Fruit trees are often injured by an accumulation of moss and lichen upon their branches; where the hand cannot reach them, an application of fresh lime will effect their destruction.

Gooseberry and currant bushes, when old, are frequently covered with moss. A good dusting of powdered fresh lime, put on when the bark is moist, will entirely destroy it, rendering the stems clean and healthy.

During favorable weather, if not yet completed, fork up slightly the space between the strawberry rows, and place some decayed barn yard manure between them.

Also surface stir the ground over the roots of dwarf pear trees, and give a mulching of the same material.

Strawberries in pots should now have protection of some kind, so that they may have shelter from heavy rains and hard frosts. If no other protection, plunge the pots in the ground or ashes, and cover with straw mats during wet and very cold weather. A plant in a pot, unprotected, is in a far worse condition, as respects casualties and changes, than if it was planted out in the ground.

The Flower Garden.

All flower beds and borders should now, whenever the weather is favorable, be spaded up and neatly put in order for the winter.—Wherever it is intended to plant dahlies, hollyhocks, and other strong growing plants next summer, should be well prepared by deep spading and working in some good rotten manure. There is generally more time to spare now for this kind of work than at spring time, when so much demands our attention in every department.

At this season of the year attention must be paid to the protection of plants, such as carna-

tions, tulips, &c. The great secret is to keep them secure in bad weather, but at all other periods to have them freely exposed to the action of the atmosphere, so that they grow up strong and be enabled to withstand hard weather of ordinary character. Now is the time to secure a valuable supply of material for enriching the flower beds. Leaves are generally, at this season, everywhere abundant. They should now be collected and put in some out of the way place, with a mixture of light soil and any decaying vegetable matter left to decompose, it will become, in a season or two, a most valuable compost for potting plants, or for spreading upon the beds and borders of the flower garden.

ROSES—The genial and delightful autumn weather has brought on a healthy and free growth in many kinds of plants which had become almost dormant. This is especially the case with our roses. We do not remember for several seasons past so much autumn growth as at the present time, not only in the production of vigorous wood, but in beautiful flowers—thus raising our hopes and expectations of careful cultivation in a more than usual degree, longing as we do to see the lovely buds of our favorite "Teas," but not without apprehension of accident by frost, &c. Our desire is also very strong to obtain early information on the new addition we ought to make to our rosery.

For the purpose of satisfying myself as far as possible on this subject, and to afford assistance to the lady friends of the "Farmer," I have taken opportunity to pay a visit to Mr. John Saul's gardens, at Washington, whose stock of roses are in fine, healthy condition, and many of them in beautiful bloom.

The undernamed are a few which we thought the most beautiful, several of which have flowered upon the college grounds.

"HYBRID PERPETUAL."

BEAUTY OF WALTHAM.—This we think a good acquisition. Color, a beautiful crimson, large and very double.

DUCHESS DE MAGENTA.—White, with pink centre. A delicate and beautiful rose.

GENERAL WASHINGTON.—A first rate rose, of a beautiful rosy crimson color, and very double.

JOHN HOPPER.—This we consider one of our best roses grown upon the college grounds. It has continued to bud and bring forth its beautiful large and exquisitely shaped flowers, from June to the present time, (Nov. 1st.) Its large, full rosy crimson flowers, and vigorous habit, will render it a general favorite.

MAURICE BERNARDIN.—May be considered a very

good rose, both from its brilliant vermilion flowers and good habit of growth.

SENATEUR VAISSE.—This magnificent rose may be described as a brilliant crimson scarlet, of large size, and delightfully fragrant. This is one of the best in our collection.

SOUVENIR DU CONTE CAVOUR.—Has beautiful dark crimson flowers, large and very double. A No. 1 rose.

MADAME VICTOR VERDIERS.—Is one of the very best. Its flowers are beautiful bright rose, large and of most exquisite form.

LORD MACAULEY.—One of the gems amongst roses. Its superb, bright dark crimson color, added to its bold and perfect form, gives it a pre-eminence, in company with others, that attracts immediate attention to it. We have had this brilliant rose in flower during the entire summer and autumn, and it has been more admired than any other kind in our collection.

Here I must stop for the present, and would say to all our rose loving friends, that they will be safe in purchasing any or all of the above named kinds. D. B., *Agricultural College.*

[*Note by Editor.*—We will endorse the commendations bestowed upon these beautiful roses. The John Hopper and Lord Macauley attracted our special admiration.]

Agricultural Policy of the South.

The opinion here given of the proper course to be pursued by Southern landholders may ruffle the pride of some, and may conflict with the ideas of others, as to the policy to be pursued in the material reconstruction of the South, but the writer, as one of the sufferers himself, trusts he may be excused for the utterance of honest opinions dictated by the deplorable condition to which the planting States have been reduced, not only by the ravages of war, but also by the industrial paralysis in which they have been held since their subjection.

[That the entire agricultural system of fourteen States has been partially, or completely overthrown, and that another, more in accordance with their future condition is to be adopted, it is mere folly to deny, and the sooner we make up our minds to accept the situation, and make the best of it, the better for all.

Under the new system, the first, and most obvious change to be made is in the extent of landed estates. These in most instances are far too large, and though it may wound the honorable pride of the holder to alienate even a portion of his ancestral acres, he had better part with that portion by his own act, than to lose

the whole under the hammer of the sheriff. To sell a part to obtain capital wherewith to cultivate the remainder, is obviously the true policy; but can this be done? Can it be of general application? We fear not, for where all are sellers, where are the buyers to come from? Under present circumstances we cannot get them at the North or abroad, for *neither capital nor labor* will seek a country whose *political status is undefined*. Failing, then, in this, what is the next best course to pursue? Why, clearly to reduce the number of cultivated acres to an extent proportioned to the diminished labor, and increase the mowing and grazing land. The system of enclosures should be done away with entirely, and every man be compelled to take care of his own stock, but if this be too abrupt a change we should at least get rid of the cross-fencing by keeping the grazing lands in a permanent pasture, and this, by the way, makes the best grazing. The older the sod, the richer the grass, is in Europe an agricultural maxim. Another thing to be done is to aim at greater diversity of production. Southern agriculture has been too long running in one groove. Why should we confine ourselves to four or five staples when we might have a dozen? Let us by stringent legislation get rid of the thousands of useless curs which infest the land, and we will produce more and better wool and mutton than the Northern States. The whole of our middle region, along the Blue Ridge, is the best dairy region on the continent. Most of the Northern States, including Wisconsin, are becoming large growers of hops, at remunerating prices, and yet there are hundreds of gardens in Virginia and Maryland in which hop vines have been flourishing from colonial times to the present, without care or attention. But the great necessity of the moment is labor, and we should seek to obtain it through legislative action. No matter how great the debt of the States may be, they should, as Maryland has recently done, make liberal appropriation for the introduction of foreign labor. State Bureaus should be established for the express purpose, and capable, well paid agents sent abroad to demonstrate the superior advantages offered the immigrant by the Southern States, with their superior climate, lands cleared, roads made, schoolhouses and churches already built, and proximity to the seaboard and large growing markets. The smallest rill diverted Southward from the great tide of immigration flowing to the wild lands of the West, will soon swell into a great stream of humanity, which will restore us to more than our ancient prosperity. —*Turf, Field and Farm.*

For the "American Farmer."

Veterinary Department.

ON BREEDING.

BY DR. DADD, VETERINARY SURGEON.

The choice of a sire and dam is a point of the utmost importance in view of successful and profitable breeding, as the offspring will be found, in almost every instance, to inherit the qualities of its parents: peculiarity of form and constitution are inherent, and descend from one generation to another. Hence the necessary attention to those matters which breeders are too apt to overlook. Nor is it sufficient that one of the parents be of fine form, &c., and the other faulty, for the perfection of the sire may be lost through the deficiencies of the mare, and *vice versa*.

In the selection of a stallion, many things should be observed. There should exist general uniformity and compactness in every part. The height should depend on the occupation which the offspring is destined to fill. The legs should be particularly examined, and disease ought not pervade any part of the system. Fat heavy horses, with white legs, and crane unseemly heads, should always be avoided. Horses should be free from specks on the eyes—and partial, or total, blindness. Temper is an essential point, for vice is sometimes hereditary. Stallions whose sexual organs are called too often into requisition are apt to beget weak offspring.

As regards the mare, it is well known that she contributes much towards the integrity of the offspring; hence it is essential that she be in full possession of her natural health and strength. It is a great error to suppose that a mare which has once been good, and capable of great exertion, should, when old, and no longer able to work, produce offspring equally efficient as when in her prime: in such case the foal will be likely to inherit some of the weakness incidental to an impaired constitution.

Mares should never be put to a stallion until they have obtained maturity, which occurs about their fifth year. I am aware that mares are bred from at a more juvenile age than this, but the practice is objectionable, for pregnancy and parturition tend to stunt her growth. The period of pregnancy is eleven months; after the sixth month great care and gentleness is requisite: moderate exercise is essential, for hard work or feats of speed are apt to cause abortion.


Some writers recommend that the mare be put to the stallion early after foaling: this is improper, for the simple reason that the mare has


to furnish the elements of nutrition for both the foal and fœtus in utero, and also for the preservation of the integrity of her own system; which herculean feat must overwork her digestive organs.


Disproportionate copulations are also bad, as a large horse and small mare: the size of the horse should be attained and improved gradually, and this is evidently a better way than that of attempting sudden increase in size.

When the period of foaling draws nigh, the mare should be separated from other horses; after foaling, turn her into a pasture, if the season permits, or let her have the run of a barn yard. At the age of six months the foal may be weaned. Should it die, humanity seems to suggest that the mother have a few weeks rest, so as to recover from the effects of parturition.

GADFLIES.—The gadfly not only persecutes by its bites, during summer, healthy oxen, but also deposits its eggs in their skin, which give rise to tumors on the back and other parts, in which the larvæ become developed; they live there on the fluid which the soft parts secrete, and make their escape thence in the following spring in order to become metamorphosed. The greater the number of tumors the more is the strength of the animal diminished by pain and suppuration. For this reason we should endeavor to free the animal as soon as possible from these larvæ pests, by making a slight incision through the skin, and then squeeze them out, the orifice in them to be occasionally sponged with whiskey and camphor, in the proportion of one ounce of gum camphor to half a pint of whiskey.

 The cattle reporter of the *Prairie Farmer* says, "it will cost farmers ten cents per pound, at the present price of corn, to make pork, and as they cannot reasonably expect to realize over six dollars and six dollars and seventy-five cents for live weights, it is to their advantage to sell their grain and send in their hogs, although but partially fattened."

 Mr. T. Jones, of South Hadley, Mass., who has three acres in strawberries, says in the *Homestead*, that after having tried more than twenty varieties he has settled down on the *Wilson* and *Fillmore* for the main crop, and the *Early Scarlet* and *Triumph de Gand* for early and late.

 Italy continues to supply large quantities of cattle to France.

Orthodox Manuring.

A Royal Agricultural College Lecture.

BY W. WALLACE FIFE.

Limited as may be the course of observations I have the honor to submit to you, comprising as they do the two great leading objects of drainage and manures, they in reality embrace in their scope both of the great periods into which the history of agriculture has been divided. The first of these periods, as you are no doubt aware, is regarded as that of mere *mechanical improvement*, when as yet the sole thought of the cultivator was how he might best work or till his land; and to this period the system of land-drainage, to which we have now endeavoured to pay all manner of consideration, has lent the finish of perfection, enabling to be brought into play those implements of husbandry which are the glory and the wonder of our inventive times, and the tilth to be reduced to any required degree of fineness for every object of culture. The second of these periods in agricultural history is, however, that of scientific improvement, not simply in mechanics, but more especially taking in the aids of chemical science, so as to supply and stimulate in the earth that fertility whose development the mechanical preparation of the soil can be so admirably caused to favor. When I was desired by your Reverend Principal to demonstrate before you the advantage of correct draining practice in connection with the application of manures, it struck me at once that a thought must have been passing through his head which has often occurred to mine—that the connection betwixt a soil properly improved and the use of manures and fertilizers in such that we not only have not sufficiently studied it, but we cannot dwell upon it too much. The subject is, however, too wide, and in its present state of discussion perhaps too speculative, for me to take up your time with it; suffice it that I refer you to those startling questions which it seems to have suggested to the apprehensions of the Baron von Leibig regarding the exhaustion of soils chiefly through the action of fertilizing stimulants, enhanced, as doubtless that action must be, by the great susceptibility of solution which the valuable ingredients stored up in our active soils exhibit in the increased productiveness of crops. All this you will find in due time debated in the excellent scientific and agricultural journals of the day, and I shall therefore no farther advert to it than to refer to the fact that it shows us how completely the manipulation of the soil, which we could never effect without proper drainage, goes along and works together

with sound and sufficient manuring in the production of crops. Nor need we, I think, be afraid, so long as we understand the proper rotations to be followed in order to recruit the soil and guard against exhaustion, of taking full advantage of the combined action of the two great but distinct and different agencies. The soil itself will soon inform against us if we seek to abuse it—clover will fail to appear in clover-fields, and turnips refuse to grow in turnip soils, and nature will take immediate revenge for an outrage which theorists speculate upon seeing only rebuked by some slow but certain access of sterility.

As matters at present stand with the farmer, it is only by a liberal supply of manure to land kept properly in heart that he can expect to rear remunerative crops. He must work and he must weed—he must plough, grub, stir, roll, harrow; but unless he puts in the manure, he may not be able to calculate on a due reward for his labor. Undoubtedly there is a system, that known as *Lois Weeden*; and there are instances of land having, as in ancient, and why not ignorant, times, been rendered productive by working alone. But science teaches us that the act of cultivating between the rows of wheat, that the mechanical working and pulverization of clays, on which year by year crops of wheat are grown without manures, amounts in reality to nothing but a mode of liberating those elements of fertility in the soil of which but a limited portion are at one time found available, or in a soluble condition, but which, by the commingling of ingredients which react on one another, are liberated to a greater extent than ordinary. Combined with this mode of cultivation, it appears to me that the judicious addition of manure would wonderfully improve the present system of cropping, although, of course, it would be dangerous to omit a proper course of rotations. This last is an important point to be attended to by the agriculturist of whatever grade, whether tenant or proprietor, because we have for centuries been drawing from the land its more valuable constituents; and of course, as this goes on, the cost of cultivation, instead of being reduced in proportion as the powers of production in the soil decline, will rather be increased by the extra efforts we must make to keep up the returns. And this is exactly what is now taking place. The enormous sums expended on fertilizers in British agriculture are, however, eminently successful in keeping the returns up to and even beyond the mark of expectation. The agricultural chemist have it all their own way. But as doctors differ, so do they.

You are of course aware that they divide into two grand theories. Liebig favors that known as the "mineral theory," whilst Messrs. Lawes and Gilbert oppose to it the "nitrogen theory." The mineral theory rests its entire reliance on the importance of mineral or saline substances, and maintains that, if the inorganic constituents of the plant be sufficiently supplied, the plant will find itself in nitrogen and carbon, the one in the form of nitric acid and ammonia, the other in that of carbonic acid, from the atmosphere. Whereas the nitrogen theory, assuming the existence in the soil of an inexhaustible supply of saline substances, with constant accessions from rocky decomposition and disintegration, holds in fact that there is already a surplus of plant food or pabulum in the soil, requiring only the addition of ammonia to develop the growth of plants. That there are soils more or less destitute of the mineral food of plants this theory does not gainsay; it holds, however, that in general there exists an excess of this, of which plants are precluded from participating because of the difficulty of absorbing ammonia from the air, whilst the addition of ammoniacal salts in the soil supplies the stimulant that enables the crop to become more productive. No doubt the truth lies somewhere betwixt these conflicting theories. It is certain that of an excess of mineral matter the plant cannot take advantage without a corresponding excess of gaseous food, and that this last can only be supplied by adding to the soil substances whence the roots of the plant may obtain it. To this demand we are obliged to conform, under an advanced condition of cultivation, which asks a yield of thrice or four times the amount with which the farming of only a few years ago would have remained content. In a well-cultivated soil, the plant, however, finds not only mineral food, but the decomposing remains of plants grown in former years, which supply carbonic acid and ammonia, that add materially to its development. Agricultural chemists formerly thought that whatever was taken up from the soil by the roots of the plant must be soluble in water, and that nothing else was available for the growth of the plant; but Liebig's more recent doctrine is, that the roots themselves possess an inherent power of solution over mineral substances, although it is indispensable that water should be present.

Farmyard manure has been termed by Dr. Voelcker a universal and perfect manure, because it contains all the elements to be found in the soil. Manures, in the form of cattle-dung and ordinary farmyard compost, have indeed been known and employed from time immemorial for

the purpose of fertilization. Of the constituents of farmyard manure nitrogen is the first in value, phosphorus the next; and the great object in its economy or management should consequently be to preserve these constituents which are evolved in the dung-heaps during the process of putrefactive fermentation, and are carried to the soil in the respective forms of ammonia and phosphates. The change which occurs in the fermentation of dung-heaps is this: In

	Fresh Dung.	Rotted Dung.
The organic matter is.....	83.48	68.24
And the inorganic.....	16.52	31.76
	100.00	100.00

and were it not that excellent fixers of the ammonia are formed within the heap whilst this is going on, considerable deterioration would ensue from the process. This manure, as we all know, is composed of excrementitious matters of the live stock of the farm, intermixed with straw or other materials used as bedding or litter for the animals. Thus, whilst 100 lb. of farmyard manure are considered equal to 125 lb. of the solid excrements of the cow they are equal only to 91 lb. of the liquid excrements of the cow, to 73 lb. of the solid, and to only 16 lb. of the liquid, excrements of the horse. Still it is found that to apply for any length of time any one manure is distasteful to the soil, and such continued application, however rich in nitrogen, is productive of failure and disappointment in the results. It has been estimated, in regard to the production of dung, that one horse or cow yields per annum 10 loads for a two-horse wagon, and a young ox or cow 5 loads; that one horse fed in the stable yields 15 loads of dung, and one turned out to grass $7\frac{1}{2}$ loads; so that, calculating at the rate of 20 loads of cattle-dung per acre, or 18 of horse-dung, an ox may be said to manure half an acre, a young ox a quarter of an acre, and a stable-fed horse as much as five-sixths of an acre. A horse fed, however, principally on corn, will yield dung equal in value to one which consumes twice as much weight of hay; and it is quite obvious how the food of the animal affects the excretions, and why the *excreta* from corn or cake should be vastly superior in value to that of an animal subsisting on straw. The age and character of the animal produce also corresponding results. A full-grown animal abstracts from its food only the materials necessary to replace the waste of its body. A growing animal not only does the same, but, moreover, the additions required to build up its skeleton, muscles, and tissues. The matured animal does not separate the phosphate of lime required for the bones, or

so much gluten and nitrogenous compounds for its flesh. Thus with a full-grown animal the manure may be taken to represent all the constituents present in the food, with exception of the carbon wasted in respiration. All breeding and milk-producing animals severely impoverish the food they receive, and hence their manure is of less value. These facts I adduce to show you that the conditions under which farmyard manure may be produced differ so materially as to render analysis useless. Of course also the proportions existing between the straw or litter used and food consumed alter and affect its value. Everything depends upon the management. Dr. Voelcker in one experiment found 961 lb. of dry manure reduced in six months to 689 lb., and in one year to 507 lb. The soluble organic matter he at first found to be 70 lb.; in the course of six months it became 86 lb.; but exposure to rain in three months reduced it to 50 lb. In other experiments 100 cwt. of fresh dung became reduced to 80 cwt. when half rotted; 60 cwt. when "fat and cheery;" and to about 45 when completely decomposed. 100 cwt. of dung contains, when fresh, 40 lb. of nitrogen; but these are dissipated, in the form of volatile ammonia, during fermentation, in the first period 5 lb., in the second 10 lb., and in the third 20 lb. Thus it is that theorists maintain that, since dung when fully decomposed may suffer a reduction of one-half in bulk and value, it is better to apply it fresh to the land, to prevent the loss of its volatile gases and drainings from the heap. Thus, also, the protected manure formed on the box-feeding plan is contrasted with the farmyard dung of the open pit, is richer in ammonia and in soluble constituents, both organic and inorganic. According to Dr. Voelcker,

BOX-MANURE CONTAINS—

Water.....	71.04
Nitrogen—ammonia, 2.37.....	1.95
Organic matters removable by water.....	6.42
Inorganic do.—viz.,	
Phosphoric acid, 0.30 }	
Potash and soda, 2.00 }	4.28
A small quantity of lime and a considerable quantity of silica not determined.	

COMMON FARMYARD—

Water.....	71.00
Nitrogen—ammonia, 1.70.....	1.04
Organic matters removable by water.....	1.82
Inorganic do.—viz.,	
Phosphoric acid, 0.21 }	
Potash and soda, 0.80 }	2.78
A trace of lime and a considerable quantity of silica not determined.	

To set before you more specifically the constituents of farmyard manure, however, I must exhibit from the same authority its detailed composition:—

	Fresh.	Well-rotted.
Water.....	66 17	75 42
Soluble organic matter*.....	2.48	3.71
Soluble inorganic matter (ash)—		
Soluble silica.....	0.237	0.254
Phosphate of lime.....	0.299	0.382
Lime.....	0.066	0.117
Magnesia.....	0.011	0.047
Potash.....	0.573	0.446
Soda.....	0.051	0.023
Chloride of sodium.....	0.039	0.037
Sulphuric acid.....	0.055	0.058
Carbonic acid and loss.....	0.218	0.106
Insoluble organic matter.....	1.54	1.47
Insoluble inorganic (ash)—	25 76	12.82
Soluble silica.....	0.967	1.424
Insoluble silica.....	0.561	1.010
Oxide of iron and alumina,		
with phosphates.....	0.506	0.947
Containing phosphoric acid (0.178)		(0.274)
Equal to bone-earth.....	(0.386)	(0.573)
Lime.....	1.120	1.667
Magnesia.....	0.143	0.091
Potash.....	0.099	0.046
Soda.....	0.019	0.039
Sulphuric acid.....	0.061	0.063
Carbonic acid and loss.....	0.484	1.295
	4.05	6.58
	100.00.	100.00

* Containing nitrogen.....	0.149	0.297
Equal to ammonia.....	0.181	0.360
† Containing nitrogen.....	0.494	0.309
Equal to ammonia.....	0.599	0.375
Whole manure: ammonia in free state.....	0.034	0.046
Whole manure: ammonia in form of salts.....	0.088	0.057

To read this analysis, we must have recourse to the market values of fertilizers as set down by Professor Way (Royal Agricultural Society's Journal, xvi. p. 539)—viz., nitrogen, 7 3-10d. per lb., ammonia, 6d., phosphate of lime, 3d., soluble phosphate of lime, 3½d., potash, 3 3-10d.; whence we make out the manure, when fresh and unfermented, to be worth 13s. 6d. per ton, and worth only 12s. 6d. when well rotted. But the fertilizers form only, in each case, 47½ lb. to the ton, against 6 cwt. 1 qr. 10 lb. of fresh, and 4 cwt. 1 qr. 27 lb. of well-rotted, materials, besides 13 cwt. 0 qr. 26½ lb., and 15 cwt. 0 qr. 9½ lb. respectively of water. It may be said, then, that in farmyard manure the fertilizers exists in a very bulky shape, since we have to carry to the land, with 48 lb. of actual manure, from 13 to 15 cwt. of water, and from 4 to 6 cwt. of inferior matter. But whilst this may entail a large amount of carriage and labor, the mechanical effect of the mere form of farmyard manure must not be ignored, since we find it exerting an important influence on the mechanical condition of the soil, admitting atmospheric air, admitting changes of temperature, and evolving gases, promoting vegetation, as well as by its fermentation yielding the heat which produces germination and growth. It would seem not at all a false opinion that the value of our active manures are considerably increased by their more complete distribution in the soil; and farmyard manure,

in the form in which it not only supplies but distributes the food of plants, would appear to teach us the lesson that our artificial manures, thoroughly intermixed with other matters with a view to their more effectual distribution, would prove productive of more advantageous results.

One great object of every farm should therefore be the manufacture of manure as a means to an end; for in this process as a basis all the profitable results of good farming really and truly depend. Here, however, arises the standing reproach against our common practice of agriculture, and indeed our whole social economy, for the culpable waste of enriching and fertilizing substances which is constantly going on. What we have chiefly to concern ourselves about for the present is the practical management, however, of the manure-heap. Of the various animal, vegetable, and mineral substances that may compose it, the action of one will sometimes be diametrically opposed to that of another—putrefaction being resisted in one instance, whilst it is promoted in another. Salts from the ashes of plants fowls' dung, even in some instances the dung of horses in peculiar conditions, quicklime, and other substances, will resist putrefaction; whilst the salts found in calcareous earths will promote it, and horse-litter, when rendered stimulant by the salts contained in it, will do the same. Lime, after having been burnt, will, on being allowed to rest for a few months, be found to convert the putrescible matter of the soil into a gummy substance. The fermentation which takes place in manure is putrefactive; and precisely as vinous fermentation by an extending process renders sweet or saccharine materials spirituous—precisely as acetic fermentation by exteignation of its sourness converts liquids entirely into vinegar—so does the putrefactive fermentation of the dung-heap extend itself and increase the general putrefaction around, till the substances of the heap is heated, and gradually converted into mucilage (gum) and salts. This last result is that desired, and the leading purpose in the management of the dunghill is to maintain a uniform state of fermentation, so as to permit no one portion of the heap to precede another in reaching the stage productive of salts. Thus, as lime, if admitted into the heap, unless in very limited proportions, would operate as a stimulant, and cause the partial maturity of some part of the heaps, especially if ineffectually intermixed—this is above all things to be avoided, and may be so by carefully turning and distributing the materials throughout the heap. So much is nowadays heard of guano and other artificial and special stimulants of the soil and of particular

crops, that we are apt to fall into the error of regarding farmyard manure as no longer the mainstay of the farmer. Still it is his first, his best, his cheapest, readiest, and most natural resource. No farm that has to a great extent that which is grown upon its surface elaborated as food, and restored again in the form of manure, can ever be impoverished. Still there are accessions of immense value to be acquired through the same channel. It was found in Norfolk that 10 loads of dung from cattle fed upon oilcake were equal to 16 loads from beasts fed upon turnips. The deterioration of dung from reckless exposure to the weather is such that it is really difficult to conceive why manures which are known to be fraught with volatile principles (salts of ammonia—smelling-salts, in fact) should commonly be tossed out from stables and feedingsheds, openly exposed, and neither systematically laid up in any form, nor secured from washing and exhalations, nor even mixed together in proportions suitable to their component qualities. No sooner is excrementitious matter exposed to the atmospheric air than a change commences in it. In fresh farmyard dung we have, indeed, all the elements for promoting fermentation, but these elements necessarily exist at that time in other combinations than those that best suit the process of assimilation in the growing plant. It is thus that we require to change the condition of the manure by fermentation—by the conversion of its insoluble compounds into others capable of solution in water, or, as Liebig asserts, capable of it by the roots of plants. The presence of atmospheric air and that of water are necessary to render the decomposition complete. And in the decay of vegetable matter there is formed a large amount of humus compounds, which, by forming non-volatile compounds of ammonia, become the great conservators of the latter in the heap, as already alluded to. Recent investigations given in the 17th volume of the Royal Agricultural Society's Journal, show that nearly all the ammonia formed in the well-regulated fermentation of the dung-heap is secured as humate of ammonia. Fermentation we find to proceed more rapidly during the summer than during the winter. Horse-dung, especially when moist, ferments rapidly; and its components must without delay itself, it will so quickly give off heat as to become dry and valueless, be intimately mixed assimilated in the heap, otherwise, if left to or if not, unequally decomposed and mouldy. Retention of the natural moisture of horse-dung, or, failing that, regular and moderate wetting, would reduce it to the condition known as *spit dung*, or to the con-

sistence of a paste. Completely decomposed and reduced to the state of *rotten dung*, horse-dung appears much reduced in bulk, and in many cases would be found too concentrated a manure for plants in the first stage of growth. The dung of horned cattle, being naturally more cool and moist, ferments more slowly; such also is its effect on the soil, but it has invariably been considered as a more durable manure than horse-dung. When used alone, however, it is found so devoid of energy that in Essex six acres with horse-dung were found to yield more than nine with cow-dung, which suits best, therefore, for being included into a compost along with the other contents of the farmyard. Strong pig-manure, it may be mentioned, has been discovered to be quite a specific for growing clover. But for that matter, a gentleman not unknown to you, my friend Mr. Duckham, editor of the "Hereford Herd-Book," has found a rich dressing of farmyard manure itself the very best specific for clover sickness. He had suffered greatly from his land being clover sick, and had tried lime to a considerable extent, mixed with soil, both as topdressing and otherwise, with obvious benefit, still he was not to be satisfied without finding out the perfect cure; and, as he at one time thought, he did so, for the most marked effect was produced last spring with a rich topdressing of farmyard manure. The plant had been decidedly "going" in different parts of the field prior to the introduction of the manure-cart; but he does not think than one root went afterwards. Why, it looks as if nature found us fools, and left us so when we reject her hints; and that the natural droppings of animals are, after all, the natural cure for the serious evil alluded to. I regret to find that in subsequent attempts Mr. Duckham has not, however, found this remedy infallible. But to return to our dunghill. Straw employed as litter may be termed the principle medium, or, as the doctors express it, vehicle, through the help of which we mix and administer our home-made manure. Trodden down into the dung by the weight of the animals walking and lying on it, acquiring value by absorption of urine, as well as by combination with dung at various stages of its decomposition, straw becomes thoroughly embodied in the general mass, imparts consistence to the whole, and carries it more evenly through the process of fermentation and putrefaction. Were it not for the straw the dung would rot unequally, imperfectly, indeed with difficulty. Bakewell's favorite notion of converting the whole straw of a farm into food for stock, and that in passing through the animal body it be-

came more highly enriched as a manure, is now exploded. In Berwickshire, a county standing foremost in correct feeding practice, although the reliance on turnips is rather too exclusive, the straw is not much used as food, but is almost entirely broken down in the fold-yards.

(TO BE CONTINUED)

Clover as Manure.

It has been justly remarked that the red clover plant is the foundation of successful farming. The remark will apply to all portions of the country, except it be to the neighborhood of cities where land is worth several hundred dollars per acre, and where stable manure may be obtained in abundance for the growth of garden crops, and other high priced products. Agricultural chemists, as well as observing farmers, have given it as their opinion that the manure of animals fed on good clover hay, is worth five times as much per load as manure from straw fed animals. Taking it as granted that the estimate is approximately correct, it is obvious that the turning under of a green crop which produces such rich manure, must in itself add greatly to the fertility of the soil. If a ton of green clover is worth five times as much for fertilizing purposes as a ton of common yard manure made by animals fed on straw or timothy hay, and with straw litter largely intermixed, then a good crop of clover might be rated in value about as follows: Two tons of stalks and leaves, estimated when converted to dry hay, would be equal to at least four tons of the green material; and half this amount in roots would be two tons more—the whole, six tons, multiplied by five to bring it to the standard of common manure, would show a heavy crop of clover to be worth thirty tons of ordinary yard manure. This estimate may not be strictly correct, and it cannot always be, as yard manure varies much in its value according to age, amount of straw or cornstalks used, and mode of heaping or preserving. But let the estimate be varied so as to meet the differing circumstances, and it will still be seen that clover possesses eminent advantages. The influence which the roots possess in loosening and rendering mellow the heavy soils in which they grow, is one of great importance—assisting as it does the diffusion of the manure of the leaves and stems through the soil in the process of decay. Those who have been in the practice of working heavy or clayed land, can appreciate the great difference between the condition of an inverted sod turned over like brick clay, when nothing but timothy or grass has

grown upon it, and another sod thoroughly loosened and pulverized by the roots of clover, which have everywhere penetrated through it. The one is like clammy, unleavened bread; the other like the spongy texture of a well raised loaf. It is in this way that clover may exert a beneficial influence, either in the ordinary processes of cultivation, or in favoring the intermixture of common manure through the soil, nearly as great as its enriching value.

Estimating the value of a good clover crop as equal to thirty loads of yard manure, cultivators may easily figure which will be most economical in application, including the drawing and spreading. On hills, or on parts of large farms remote from stables, the balance will be found to be much in favor of the green crop. Every thrifty farmer manufactures and saves all the yard manure which he can; but in common mixed husbandry it is insufficient of itself to keep up a high state of fertility in all the fields. A rotation comprising the frequent turning under of a growing crop, becomes absolutely essential to a successful and profitable husbandry. Such a rotation will usually be found most advantageous if the crop is ploughed under at two years of age. The plants will then have obtained full size. It may be cut for hay the first year and if cured without becoming wet, will not only make an excellent nutritive feed for cattle and sheep, but the manure resulting from this feeding, as we have already remarked, will be of high value. Since the introduction of mowing machines, hay tedders, horse rakes and horse forks, there is little necessity of allowing a crop of clover to become blackened and spoiled by rain.

During a recent visit to the nurseries of Geneva, N. Y., we had occasion to observe the great efficiency with which clover manuring was managed in preparing ground for planting trees. The comparatively small quantity of manure furnished by the village rendered the mode of enriching by clover an absolute necessity, and the excellent, healthy and vigorous growth of the young trees proved its great value. The crop is ploughed under when in full blossom; if done sooner, there is too much succulence and not enough substance; if later, the stems have become too hard and woody, and do not become so well pulverized in decay, nor diffused through the particles of the soil. Before ploughing, the crop is well harrowed, which not only lays the plants flat on the ground, but draws them in the same direction as the course of the plough, allowing the sod to carry its own crest of plants when inverted. A log chain attached to the forward part of the plough, and to the right

handle, and hanging in a loose loop between these points, and dragging on the ground, assists in completely turning under the otherwise straggling plants. It is thought best not to turn them under with a very deep furrow; and rolling the furrows flat immediately afterwards, prevents the drying of the leaves and stems, and hastens decay and intermixture. As young trees require a good depth of soil, the sod is again inverted with a larger plough, or to a greater depth, after the lapse of several weeks.

Clover is generally too thinly seeded. There is no expenditure more economical than the purchase of an abundant supply of clover seed. One peck per acre is not too much—we have found a half bushel to yield an increase worth much more than the additional cost of the seed. But a heavy seeding alone will not answer the purpose, unless the soil is in a proper condition.

The practice of top-dressing wheat fields with fine manure applied in autumn, when the grain is sown, is not only highly advantageous to the wheat, but insures the germination and vigorous growth of the clover. The practice of brushing the surface very early in spring with a fine tooth harrow, would doubtless be of great additional use.—*Country Gent.* X

Super-Phosphate of Lime.

Bones are among the most potent fertilizers, and should be carefully saved on every farm, and in every city, and village, for the enriching of the lands of the country. Their composition chemically is as follows: In one hundred parts there are of earthy matter sixty-six, of organic matter thirty-four. The earthy part consists of phosphate of lime, and the animal or organic is a substance called *gelatine* or glue. Both of these are fine manures, indeed the very richest. The bone is unavailable, however, until it is decomposed, and but few know how to effect this. When ground to a powder the combined action of air, and moisture, and earth will effect this object—but the grinding is a difficult matter, and involves considerable expense to prepare for it; undoubtedly the best and cheapest form of bone fertilizer is what is termed *superphosphate* of lime, (sulphuric acid and raw bone). This substance is manufactured and sold widely, and, where you can rely upon its purity, we most heartily recommend it to our readers.

We feel like giving our readers a simple recipe, and if they choose to do so they can manufacture it for themselves. Take 100 pounds of bones, break them as fine as you can with a hammer, put them into a two bushel tub; to fif-

ty pounds sulphuric acid, add twice its bulk in water, pour one-third of this over the bones, and let it stand twenty-four hours, stirring occasionally; add one-third more of the dilute acid, and let it stand another day and night, and on the third day add the remainder of the acid, stirring occasionally until the bones have dissolved, which will not usually require more than another day. Mix this with any good absorbing compost or finely pulverized manure sufficient to make it up and hold it in a solid form. The water will evaporate, and leave the mass dry and crumbly. You now have some five hundred pounds of the most powerful manure known. The cost will be for bones say one dollar, sulphuric acid, from three to four dollars, and your trouble, which we are not prepared to estimate accurately. Those unacquainted with chemistry may fear that the acid will destroy the properties of the bones, we assure you however, that it simply dissolves the lime and leaves the cartilage or glue unhurt, and the same form as before, until it is stirred up. Remove a bone from the acid after a day or two, and it will be of the same size and form, but soft and flexible, a mass of jelly.—*N. Western Farmer.*

Grape Growing, by William Griffith, of
North East, Pa.

Tillage is the paramount condition upon which the harvest depends, the measure of which will always be in accordance with the performance of this important pre-requisite. Tillage was the first labor assigned to man by his Maker, and by Him distinctly indicated as not only the first, which was, and of necessity would ever continue to be, the most important labor he was expected to perform.

But what is tillage? and in what way does it promote the growth and vigor of the vine, and the production and perfection of its fruit.

Tillage is the operation, practice, or art of preparing land for plants and seed, and keeping the ground free from weeds, which would otherwise injure their growth.

Tillage includes manuring, ploughing, harrowing and rolling land, or whatever is done to bring it into a proper state to receive plants and seed, and the operation of ploughing, harrowing, and hoeing the ground to destroy weeds, and loosen the soil after planting; culture, the principal branch of agriculture.

To illustrate this subject fully, would be a labor quite out of the range of my present undertaking; but perhaps I may be able to indicate about all that will be required, and to assign

some of the principal reasons why these requirements are so earnestly insisted upon.

The elements of plant growth, contained in the soil, and in the atmosphere, however abundant, are only available through the agency of tillage, by which they are involved, or rendered available for plant food. And just here let it be borne in mind that the elements are derived as much, nay, more abundantly, from the great atmospheric sea by which they are surrounded, than out of which they spring, and upon which, without the light of science, we are apt to conclude their life and growth are made almost entirely to depend; and yet, tillage is indispensable to, and the only means of promoting that organism through which, alone, these elements are made available—and is, therefore, of paramount importance.

But perhaps it may be necessary to go back a little farther, and inquire briefly into the nature of the earth's surface, which we denominate soil; in order to a better understanding of the necessity of ploughing, harrowing, or otherwise pulverizing and stirring it.

Soil may be regarded as made up of matter, in three different states, or conditions. The first has been called the *active* matter of soil, because it is in a condition capable of being dissolved in water, and consequently available for entering into the circulation of plants, and ministering to their growth. The second portion has been called *dormant* matter of the soil, differing from the first only that it is in a state of inactivity, being insoluble in water, and therefore unfitted for entering into plants. The third portion consists of what is called the *grit of the soil*, and is in a state of partial decomposition, or disintegration, is midway between the finer and more easily pulverized portions, and the solid rock from which all soils are made. We must not therefore, look upon soil as a homogenous mass, but as embracing and consisting of ingredients congregated into these three classes. I have spoken of these classes, or conditions of soil, with a view to show briefly, how it is to be affected by tillage.

By the aid of chemical analysis, these are subdivided into the many ingredients of which soils are composed.

But I cannot omit to observe here, though slightly out of the range of my subject, that in doing this, instead of furnishing a result applicable to practical agriculture, we have the instance of a combined development of the dormant portion, which is not available even by the most perfect culture combined with the active portion which was alone serviceable, and which may, in this portion, in many cases, have been

nearly exhausted; so that after all, such examinations are only partially reliable in practical farming.

But that portion of the soil which has been called dormant, and which in its natural or undisturbed condition, is really so, may be quickened into activity by the manipulation of tillage, which exposes its particles to the action of heat, air and water, the great elements of Nature's laboratory, and the most active and important agents by which the growth of all manner of vegetation is dependent.

It is of the utmost importance that the soil be kept in a condition to receive rain water, and to permit it to percolate, and pass through it to the subsoil beneath.

For let it be remembered, that rain water is by no means, pure water, but is charged more or less with carbonic acid, nitric acid, and ammonia, all powerful solvents and fertilizers.

Again, a loose and finely fertilized soil is capable of absorbing these fertilizing gasses from the atmosphere, and retaining them for the food of plants.

This condition of the soil, is also favorable to the decomposition of whatever of vegetable matter it contains, rendering it likewise available to growing plants, by which it is again resurrected, or restored to new life.

Again this condition is indispensable to the free scope of the roots of plants, enabling them to seek out and avail themselves of the food contained in the soil, increasing the fibrous roots, and thereby multiplying the little mouths that suck up the nutrition, on which the plants depend.

Also the pulverization of the surface of soils assist to retain the moisture in the portion beneath and the subsoil; it serves as a mulch to retain moisture, as well as to prevent the sudden radiation of heat, during the cold days that are so disastrous to growing crops; in short, the beneficial effects of a thorough pulverization of the soil are almost innumerable; when therefore, this condition is continually maintained, success may be said to be fairly "organized:" while, where the opposite condition is allowed to take place, failure is equally certain.

But I am imperceptibly drawn into the minutia of this branch of my subject, and I fear am occupying more space than I had intended; with a few practical suggestions I shall therefore submit this matter for the present.

I have said that with a view to complete success in grape culture, it was necessary to maintain the health and vigor of the foliage for the longest possible period. This result, as every

practical cultivator of the soil is fully aware, can only be secured by thorough tillage; by frequently stirring the surface of the soil and keeping the ground entirely free from weeds and grass.

The foliage of the vine, under these circumstances, will be most likely to continue healthy and vigorous, and will be seen to be several shades darker than when the surface of the soil is allowed to become hard and the weeds and grass permitted to grow, and rob the roots of the vines of the moisture and food, on which they continually depend, and for lack of which they must, of course, dwindle and decline.

When, therefore, it is considered that almost the entire substance of the fruit is taken up and secreted, though the immediate agency of the foliage, that through it is elaborated every particle of saccharine matter, that enters into the composition of the grape; it will be seen that if these leaves are partially destroyed or their capacity weakened before the fruit is fully ripened and perfected, its richness and sweetness will be proportionably lessened and its value greatly diminished.

"Sour grapes": without the aid of bountifully supply of healthy foliage, must forever remain sour, and green, and immature fruit remain unripe and worthless.

There are many other reasons why thorough tillage, constant and continued cultivation is indispensable to growing repeated crops of good grapes not the least of which is the fact that short of such treatment the vine will not only not perfect its fruit, but will also fail to produce and mature wood and fruit buds for the succeeding crop:

But I must not pursue this subject further, and will therefore close, but not without reminding those who intend to plant vineyards, that unless they are prepared and fully determined to give them the needed attention and culture, they will but damage an enterprise which, but for such neglect and bad treatment, will certainly prove eminently remunerative and in every way successful.—*Erie Gazette*.

Effects of Shade on the Grape Vine.

The roots of the grape vine require to be cool and shaded from the sun. In the forest the wild vine climbs to the tops of the loftiest trees in search of sunshine and exposure to rain and dew, but its roots are damp, being imbedded in the moist leaf mold, the debris of the foliage which has been accumulating for centuries, and they are frequently within reach of water.

This year we noticed a vine which had been planted against a high board fence, and had not grown much for two years, put out most extraordinary shoots, some of them being eight or ten feet in length. The apparent cause of the luxuriant growth was the shading of the roots by a boarded seat of an arbor, which was placed over them, a space being left between the seat and the fence for the vine to send up its shoots. By this means the roots were shaded from the sun, but were accessible to rain, and were kept in a desirable state of moisture.

Another proof of the utility of shade for the roots is given in the same garden by the successful growth of a Hartford Prolific vine which was transplanted in Spring, the canes being laid flat on the ground. This vine is growing rapidly, and has very large foliage, which shades the roots from the sun, and keeps the ground moist about them. Another vine of the same variety, transplanted at the same time, but treated differently, being pruned and trained to a stake, appears quite delicate, and quite unequal to the first mentioned in strength and vigor. These facts, among numerous others, indicate the necessity of keeping the soil about the roots of the grape vine shaded from the sun, and sufficiently moist to ensure a good growing and ripening condition of the wood and fruit.—*Wes Rural*.

Sheep—Shearing by Machinery.

We have long been of the opinion that no machine would ever be invented that would take the place of the old-fashioned, and time-honored sheep shears. This opinion, we believe, is very generally entertained at the present time. Such is the nature of the work to be done, such the irregularities, such the moveable and moving condition of the sheep's body, that the idea of taking the fleece from it by machine, has been regarded as entirely impracticable.

Of late, however, we have been obliged to to modify this opinion very much. Mr. R. T. Smith, of Nashua, N. H., has invented and patented a machine to which we have given two trials the present season, and have never been more pleasantly disappointed in the working of any labor saving machine we have ever seen.

The machine is not yet perfected; it is just where the mowing machine was when it was first tried, but we are confident—as were many intelligent and competent judges who witnessed its operations—that Mr. Smith has got hold of the right principle, and that ultimately he will make a complete success of his enterprise. You can leave the "stubble" of any desired length.

Not only will it shear more closely than shears, but in a practiced hand it will do it more evenly. It will not cut the sheep as badly as men generally cut them with shears. We saw it take from the neck of as wrinkled a buck as is generally found in any flock of Merinos, making hardly a scratch. We predict for its perfect success.

The old shears may now be hung up alongside of the old scythes, except they may be used for "tagging" and to clip out around the buck's horns. Go and see it all who can. The thing itself will pay any one for a considerable amount of trouble, to say nothing of the work it does. It is among the wonders of modern inventions.—

Mirror and Farmer.

Cotswold Sheep—Mutton and Wool.

When the whole community of sheep raisers is running wild, almost, after fine-wool sheep, it may seem strange to some that we should continually advocate mutton breeds. Perhaps it would not be so if these were the favorites of the speculative class of breeders. We can and do, raise as good mutton in this country as they do in England, but our people are not such mutton eaters, and though mutton raising pays quite as well, in fact better usually, than beef raising, yet our market is not a discriminating one, and the most profitable sheep to buy are fine wools, if bought with judicious care. There is always sale for Southdown and Cotswold mutton, and the difference in price is not what it ought to be, though remunerative.

Of late there has been a remarkable change in the value of combing wools. They have increased in price, while fine wools rule scarcely any higher than in specie times, and, were the quotations reduced to the gold standard, they would be lower than for many years. The reasons for the high price of long wools are several. A class of manufacturers has come in vogue which requires these combing wools, and the supply from Canada is, in a measure, cut off by the operation of the new tariff, while in England, the home demand keeps prices up, and the wool chiefly at home. The small amount of combing wools raised in this country is not, it seems sufficient for the demand. There seems to be an overstock of goods made from the finest wools, and manufacturers are buying but very limited quantities, hence the general depression of the fine wool market.

A few years ago long wool sold according to quality—length, fineness, strength and gloss—at 20c. to 25c. per pound. Now it sells at 50c. to 75c. It is not to be expected that these relative prices will continue, but it is certain that these

beautiful combing fleeces have gained, and will hold, a value far above carpet wools.

For the real wool raiser, no doubt the best policy will ever be to raise the finest and best wool, free from excess of grease; but for small farmers who have rich fawns on which a few sheep, 50 to a 100, will do well, none present so great attractions now as do the Cotswolds. They grow to an immense size, Christmas mutton carcasses weighing over 200 pounds being almost every year brought to New York, and sell at the highest prices. They make large early lambs. The grades, half-bred, are very strongly marked, and the three-quarters pure are often hard to tell from the full-blood Cotswolds, except by the accurate and distinctive marks of purity of blood.

—*Am. Agriculturist.*

Science in the Dairy.

There are many dairyman who persist in thinking it a foolish whim, that the milk last drawn from the udder of a cow contains more cream than the first obtained. Yet careful analysis have fully proven the correctness of the assumption. Schubler says the milk last drawn contains three times as much cream as that first procured. Dr. Anderson, in "Dickerson's Practical Agriculture," asserts that he found, by actual analysis, in one instance, that the last cup of milk drawn from the udder contained *sixteen* times as much cream as the first cup. The separation of cream from the milk takes place, in part, in the udder of the cow, particularly if the cow is suffered to stand at rest for some time previous to milking.

The exercise required of a cow that is driven a considerable distance, just before milked, causes an increased play of her respiratory organs. The excess of oxygen thus respired unites with a portion of the butter, of which the cream is largely composed, and consumes it. The same is the case when a cow is harrassed, or in any way seriously annoyed, just previous to being milked. It should be a great care of all dairy farmers, to keep their cows as free as possible from every kind of annoyance, and thus prevent them from inhaling an excess of oxygen.

The animal heat evolved in the consumption of an excess of oxygen, more than is sufficient to act properly on the blood, besides destroying the cream, also decreases the volume of milk, and elevates the temperature of the same to such an extent that acetous fermentation is induced, which cannot be arrested even after the milk is taken from the cow; hence the milk is diminished in richness, and speedily becomes sour. For the above

reasons, stall-fed cows, as a general thing, give richer milk than those suffered to run in the fields. For the same reason, morning's milk is richer than night's milk. The quietness of night is favorable to the formation and preservation of cream. Repeated analysis have proven all the above facts. There is more philosophy in the dairy business than most people are aware of.

There are so many changes which are constantly occurring to dairyman that cause variations in the value of his milk, even when the feeding are the same, as to render a chemical knowledge, or at least ready access to chemical experiments in this direction, of the most economic and practical importance. It is true that the animal body is not a mere chemical laboratory, in which the chemist may operate as he pleases; for there is a power there—a vitality superior to his science, but his intelligent occurrence with, and proper regard for that vitality, the changes and conditions which he desires can very generally be affected.—*Farm and Fireside.*

New Point in a Good Cow.

"Dairyman," in the Practical Farmer for Sept., presents a point in choosing a cow, which is new to us, but there is certainly sound philosophy in it. Other things being equal, he considers a cow which brings her first calf at a season of the year when feed is fresh and tender and most productive of milk, as the month of June, worth twice as much as one that brings her first calf in winter. He says he saw a very promising half Alderney heifer which took a premium at the Pennsylvania State Fair, for which the owner asked \$60. He offered to give the price provided she was to calve in June, but finding she was to calve in February \$30 was all he would offer for her.

Long observation and experience with heifers and their subsequent character as milkers have satisfied him that commencing milk in early summer is an indispensable condition to a good milker in after years, and that the difference is fully one-half in any grade of stock. The philosophy of the difference in favor of heifers coming in for the first time in June, he states as follows: "The grass being then in the best condition to produce a full flow of milk, all the parts that tend to the secretion of milk are developed to their utmost capacity.—The udder, the teats, and milk veins become enlarged, *permanently*; and the best cows I ever raised we had to commence milking several weeks before they calved, to prevent garget."

The theory seems to be that the milk vessels

become fixed in their capacity by their first use, or at last, that their subsequent development will be after the type they are first made to assume. It is not reasonable to suppose that a heifer two years old, under any circumstances, will give as much milk as the same animal will at four years old, with the same antecedents, and in this sense the milk vessels cannot be fully developed with the first calf, if the heifer be quite young. But it is reasonable to suppose that the type of the lacteal vessels in their proportions to the age and general development of the animal will become fixed at the period alluded to, and the idea is well worthy the attention of every farmer.—*Wisconsin Farmer.*

How He Killed Daisies.

I always supposed the common acceptance of the termed kill, is to destroy life. Is this what Mr. Robinson did to the daisies by spreading 4 bushels of salt to the acre? there is no doubt that salt will kill daisies, but will the same quantity that kills them increase the grasses, or does increasing the grasses keep them from coming up? Which is the case? It looks about as likely to me that daisies will die on what increases grass in quantity as it does that cock chickens would die on what the pullets would fatten.

Any kind of manure spread on land will make strong land and keep out daisies, like the strong man who kept his house and did not suffer it to be broken open; but when he neglected the thief came and spoiled his goods. I once carted seaweed from the shore, green, and spread it so thick that the salt made white on the top of the furrow, when ploughed 5 inches deep, and when I stocked it down to grass I had the greatest crop of daisies that I ever saw. It winter-killed the clover, and the daisies did not fear salt at all. I consider it about as sure death for worms.

For worms I once saw a piece of land close to the shore, that had been spread with seaweed four years in succession, and then planted to corn, and the worms did not leave more than one-half the first planting; they appeared to be about as badly frightened at salt as the Irishman's brute was at water when he got under the rock to get out of the storm. When I see worms killed with 4 or 6 bushels of salt to the acre, sown broadcast, I shall expect that one good thunder storm will kill all the crabs and lobsters in Point Judith pond.

Its fatal results on moles I have never observed, but should suppose it about as fatal as frost would be to white bears.—Now I am not dispo-

sed to kill daisies at all; the All Wise has sent them, a substitute for grass where that refuses to grow, and like all His gifts, they are necessary to the creatures that he has provided them for; and if Mr. Robinson will let them grow together until the day of harvest, and not bind them in bundles to burn, but will give them to his cattle, he will find they will be to the health of them; but if he undertakes to destroy them with such very small quantities of salt and other manures, in the course of five years he will have to say, as was said of the prodigal son, they were dead but are alive again, they were lost but are found.

John Johnson's Farming.

John Johnson's remarkable success as a farmer might be attributed to his underdraining, and to the large quantity of plaster he used for many years on clover. But this would be only a partial statement of the truth. His success is owing, first to the man himself—to his rare good judgment, combined with indomitable energy, persevering industry, close observation, and prompt, intelligent action. Second, to underdraining. Third, to the free use of plaster on clover. Fourth, to consuming all the clover, straw and corn on the farm. He has raised 3,000 bushels of corn in a year, but none has ever been exported from the farm, except some which he gave to be sent to Ireland at the time of the famine. He never sold a bushel. It has all been fed out with clover, straw, stalks, etc., raised on the farm. In addition to this, he has bought large quantities of oil cake to feed to sheep and cattle, and this has added greatly to the quality of the manure heap. Fifth, he bestowed great care on his summer fallows. They were not allowed to grow up to weeds, but were repeatedly ploughed and harrowed, and rolled and cultivated, until the stiffest clay was reduced almost to as fine a tilth as an English turnip field. Such thorough tillage is itself more than equivalent to a heavy dressing of our common straw manure.

Underdraining enabled him to work his land thoroughly and in good season. This thorough tillage set free the latent plant food in the soil. The clover it took up and organized into food for sheep. The sheep extracted the fat from the clover hay, and left the nitrogen and mineral matter in the manure heap. So of the corn, straw, and stalks. They all found their way back to the land, with oil-cake in addition. It is easy to understand why his land is vastly more productive than when it first came into his possession. Underdraining, good culture and good manure will make any land rich.

—*J. Holmes, in American Agriculturist.* ✕

The American Farmer.

Baltimore, December 1, 1867.

TERMS OF THE AMERICAN FARMER.

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Near Baltimore Street,

BALTIMORE.

GOVERNOR BOWIE.—The Governor elect of Maryland has been, for many years, well known as one of the most enterprising and successful agriculturalists of the State. His fine herd of Devons carried most of the premiums at the great National Exhibition some years ago, at Chicago; his South Downs are unsurpassed, and his Horses of well known character. The agriculture of the State should not and will not want an enlightened friend in her Chief Executive Officer.

Baltimore and her Great Rail Road.

Those of us who are happy in being Marylanders, must be proud of our good city of Baltimore, and rejoice in her present position, and the prospect of prosperity that lies before her. It is needless to enumerate physical and moral circumstances that make up a condition which gratifies all reasonable wishes. The health and life and growth of all great material interests in her midst, and, more important than these, the moral atmosphere which surrounds them; her freedom from disease; the pleasant places within and without her limits that make the happy homes of her toiling sons; these are some of the features of the lot of our inheritance.

Of her material interests we can hardly speak without mention of that great arm of her power which she reaches out to the rich fields of the west, gathering its wealth for her garner, or making new wealth in the interchange of commodities.

Her great Rail Road stops not however with this good service, but its government, with a wisdom and forecast worthy of an enterprise magnificent in itself, has provided ocean communication which opens up at once a highway of steam

from western Europe, that ere long will have its terminus on the shores of the Pacific. "All the world" of the old Roman reached from "Cadiz even to the East and the Ganges." American enterprise takes not that direction, but, travelling with the sun, goes westward to the east, putting a girdle round the earth, to reach the golden gates of riches and power, and the good, which, in the hands of a christian people, they should ever work. Baltimore, thanks to the wisdom of those who have had control of the councils of this great rail road, sits, a City upon a hill, in the shortest path of the traffic of continents, and must be for it, a city of rest, like those green places of eastern deserts, whose springing waters and refreshing verdure made first pleasant halting places, and afterwards great marts of wealth.

We had only designed, however, to introduce the following notice of our city and its prospects written by a correspondent of the *London Telegraph*:

"A visit the other day to Baltimore has impressed me much with the growing wealth and importance of that city. At the beginning of the present century it was an insignificant place enough, but its merchants had large enterprise. It is the nearest shipping point to the great modern granary of the Mississippi valley. Its merchants saw this, and pushed a railroad at great cost, and surmounting great obstacles, across the Allegany chain to the Ohio. They are 297 miles nearer to Cincinnati than New York is by her Central route, and 275 miles nearer than she is by the Erie road. They are sixty miles nearer than Philadelphia, her other rival. This is the great fact in favor of Baltimore—an advantage that must make her one of the three great cities of America. Already she numbers over 300,000 inhabitants, and is rapidly advancing. Her railroad company under the presidency of Mr. John W. Garrett, is pushing in every direction, West and South. It manages the road to Columbus, and will soon have a common management to Cincinnati; it connects by the Alexandria and Orange road with the great route to the South-west, and by its branches taps the fertile valley of Virginia. Its energetic president has put on a line of steamers to Liverpool; a line to Bremen is soon to follow. Taking climate, natural advantages, energy combined, I should not be surprised if Baltimore were soon to approach New York in the race for wealth and population. It is certainly making a bold push to be the entrepot of southern trade and the point of European immigration; and I have not told you half of the agencies that are now working to secure her this great pre-eminence."

Agricultural Editors.

GREAT PLACE FOR PRACTICAL AGRICULTURE.—The following reason for removing his establishment to the city of New York is given by the proprietor of the *Rural American*, a semi-monthly agricultural magazine that has been published for several years in Central New York:

"We need editorial assistance. We have tried a dozen assistants, within the last ten years, and sent them all away, in disgust with their lack of education, tact, and a practical knowledge of agriculture and horticulture. We think, however, that we can secure such editorial ability, when we get to New York, as will place the *Rural American* far ahead of all similar publications in this country in its practical usefulness."

We wonder what is the average size of the farms upon which the *practical editors* referred to are to test their theories within easy walk of the City Hall.—*New England Farmer*.

We do not see whether our contemporary, the *New England Farmer*, is most amused or disgusted at the idea of finding a plenty of "practical agricultural editors" in the city of New York. *Prima facie* it seems very preposterous that the *Rural American* should have to leave the "rural districts" where he has failed to find in ten years suitable editorial assistance, to hunt for "editorial ability" in a great city. But is it so absurd as it appears? First, What is "editorial ability?" Does it imply some knowledge of Agriculture in all, or at least very thorough knowledge in some, of its departments? and this, not the knowledge that a man gathers from even the best Journals and Books, but the *knowing* that he gets by taking hold with his hands and working it into his blood and his bones? and taking hold not as an ass or an ox that must do so much work, but intelligently, like one who works as well to know as to do; who works under the light of science and knowledge; who is capable of intelligent observation of the work of others; has ability to select with judgment from the writings of others, and has so much skill in writing as to enable him to present to his readers whatever he may have to say, in reputable English?

Our New England friend should know that these are old-time notions, and not worthy of this "age or nation." Ability in any pursuit now means power to command success: and success means making of money out of it. An "able agricultural editor" therefore is as likely to be found in New York as elsewhere, judging by the modern standard.

DONATIONS TO THE AGRICULTURAL COLLEGE.—

The college collection of plants, &c., have frequent valuable additions by donation. Mr. John G. Barker, of Cambridge, Mass., has forwarded a winter flowering carnation. Mr. Daniel Barker, superintendent, has presented a dozen new varieties of strawberries. Several neighbors have evinced their interest in the agricultural features of the institution by presenting desirable varieties of poultry. In many things the college will, ere long, be able to return such kind offices with interest, in valuable plants of different sorts.

Maryland State Agricultural and Mechanical Association.

The annual meeting of this association, for the election of Officers to serve the ensuing year, took place October 31st, at the rooms of the society, No. 69 West Fayette-street, with the following result: President, William Devries. Vice-Presidents—Baltimore city, Henry M. Warfield; St. Mary's, Colonel C. Billingsly; Anne Arundel, Dr. Eli Henkle; Montgomery, A. Bowie Davis; Baltimore county, Wm. Gilmore Jr.; Queen Anne's, Dr. W. H. DeCoursey; Prince Georges, C. B. Calvert; Harford, Ramsey McHenry; Cecil, William M. Knight; Charles, John W. Jenkins; Kent, D. C. Blackiston; Worcester, W. S. Aydelott; Howard, John Lee Carroll; Talbot, Colonel E. Lloyd; Washington, William Dodge; Allegany, Dr. S. P. Smith; Somerset, Dr. G. R. Dennis; Frederick, Col. George R. Dennis; Carroll, S. T. C. Brown; Dorchester, Col. James Wallace; Calvert, Dr. John C. Parker; Caroline, Daniel Field; Wicomico, Wm. J. Leonard. General Secretary, B. H. Waring. Corresponding Secretary, E. Law Rodgers. Executive Committee—James T. Earle, Colonel E. Wilkins, E. G. Ulery, Charles M. Dougherty, General Edward Shriver, Colonel Oden Bowie, N. B. Worthington, Ezra Whitman, John Merryman, chairman. It was the intention of the officers of the Society to have held an exhibition this fall, but in consequence of the scarcity of funds (the State appropriation not having been paid) with which to purchase suitable ground and complete the necessary improvements, it was determined to postpone it until the next year. The \$23,000 appropriated, increased by receipts from other sources, will then enable them to purchase an accessible ground, and to offer such inducements to exhibitors as will secure an exhibition creditable to the agriculture of our State, and surpassing any previously held in this section.

The Border Agricultural Society.

For the following account of the Proceedings of this Society we are indebted to the daily report from the ground to the *Richmond Dispatch*. The Fair opened on the 5th of November.

At 12 o'clock the congratulatory address was delivered by the energetic president, Major W. T. Sutherlin, of Danville, whose interest in all that advances the cause of agriculture is well known throughout the State. It is through his active efforts, assisted by the Executive Committee, that the Fair has been rendered a brilliant success.

Major Sutherlin was followed by Hon. Abram Venable, of North Carolina, whose address was very able and replete with sage reflections and appropriate suggestions to those engaged in agricultural pursuits. He especially urged the young men of the South to devote their energies to the development of her great natural resources.

Articles of all kinds are on exhibition. Richmond, Baltimore, Petersburg, Lynchburg, beside northern cities, are well represented. The Richmond exhibitors make a fine show. H. M. Smith & Co., J. W. Cardwell & Co., Palmer & Turpin, and P. H. Starke exhibit a variety of agricultural implements of improved patterns. Franklin Davis & Co. have a much admired collection of fruit trees, consisting of no less than 477 varieties. Gregory & Brother send seven kinds of cooking and parlor stoves of excellent workmanship.

Machinery has been sent from large manufacturing establishments in Pennsylvania, Ohio, New York, Virginia, North Carolina, and West Virginia. In addition those mentioned above, some of the most prominent exhibitors in this department are R. Sinclair & Co., Poole & Hunt, and E. Whitman & Son, of Baltimore; C. R. Richmond and Hunt & Walker, of North Carolina; A. P. Rountz and J. J. Kite, of Orange county, Va. Reapers, threshers, corn-planters, cotton-planters, corn-shellers, drills, cultivators, rakes, cider-mills, hay-presses, root-cutters, washing-machines, and similar articles abound on every side.

In the department of domestic manufacture there is a plentiful assortment of wines, and needle-work, embroidery, &c.; but it is impossible to enter into details under this head.

The race-course has not been neglected. Many blooded animals—racers, trotters, carriage, and saddle horses—have been entered. Charlotte, Pittsylvania, Mecklenburg, Roanoke, Monroe, and Halifax are all represented in this department. At half-past 2 o'clock the trotting

aces commenced, and continued for nearly two hours.

DANVILLE, November 6.—The interest in the great agricultural show continues without abatement, and every train that arrives adds largely to the number of visitors.

More than six thousand persons witnessed the trotting match to day. D. T. Harvey, Pittsylvania, entered "Brown Dick" and won the first premium. Time, 6.28. T. Paxson, Buffalo Springs, entered "Billy," and won the second premium. Time, 6.30.

Frank G. Ruffin, Esq., delivered an address at night in the Presbyterian church on the subject of immigration. He discussed the best means of promoting the introduction of capital and labor from the northern States of the Union and from Europe, and the probable influence of immigration on the future destiny of the southern States.

PREMIUMS AWARDED.—Among the premiums at the late Border State Agricultural Fair at Danville, Va., were the following: For the best thrashing machine, which cleans and separates wheat at one operation, \$20, to Linton & Lamott, of Baltimore; for best hay or straw cutter, horse power, \$5; to E. Whitman & Co., and for best corn sheller, by horse-power, \$5, to Sinclair & Co. The latter, we learn, sold all of their implements on the ground—some of the most valuable to the president of the society.

Lime.

There is no fertilizer known to us that has proved so valuable as lime, when we consider the permanency as well as the degree of improvement it has wrought. Guano, though wonderful in its effects upon a first crop, especially if it be a crop of grain, passes away with that. Plaster is expected to act upon the intermediate crop of clover, and one bushel per acre seems to answer as well as five. It is then seen no more, except indirectly by the improvement the clover causes. In ground bones we have a slow but more permanent action; the cost, however, of a sufficient dressing, is far beyond that of a full supply of lime. We are speaking, now of course, of what we know familiarly by the term lime. Ashes, though valuable, generally are costly, and hard to get at any price. Lime being furnished at a price which makes the expense per acre small, and being very accessible, has been extensively used, and if somewhat less prompt to show its effects than some others, is so permanent as to make it very popular with those who look for substantial results in improvement.

Acting well, generally, where it has not been

previously applied, cases often occur in which it seems to be inert, and it is difficult, perhaps impossible, to determine by any outward signs, on what soils it is likely to fail. Such signs as the growth of acid plants, sorrel, briars, pine bushes, have been suggested as indicating the absence of lime. The growth of these were supposed to be the result of a peculiar acid in the soil, and from this inferred presence of acid, it was further inferred that lime was deficient. The first inference has been proved to be an error, and the second falls with it. Chemical tests of lime are readily applied, and where they show extreme deficiency, there no doubt, the application would be advisable. But it would very often happen that such a test would indicate quite a sufficient supply for the mere food of plants, and a further dressing would still be found useful. There is no way of determining such cases with certainty but by careful experiment. On some soils, the application is much more profitable than upon others, and this is to be determined too only by trial.)

Experience has shown that it usually acts well on soils which are sandy, when sand predominates. It has the peculiar effect of making them more compact; giving them a closeness and consistency very different from their original state. This is especially the case when it is used in combination with other manures, and the growth of grasses. It has the effect, too, of adapting such soils to the growth of grass, causing red clover to grow luxuriantly, when previously it was impossible to get a "set," and bringing in the natural growth of green grass and white clover. We have seen such ground changed in a good wheat soil, and produce a very heavy crop of grain.

Dr. Darlington, of West Chester, Pennsylvania, where the use of lime has been so long familiar, acknowledges its beneficial effects on the lighter soils, but says that its meliorating properties are most conspicuous in a clay soil, or rather in a stiff loam. On this class of soils it has just the contrary tendency of breaking down and softening their rugged properties. It renders them more friable, less liable to be injuriously acted upon by the sun, and much more readily permeable, by the gases and vapour of the atmosphere. The West Chester farmers think that a good proportion of undecomposed vegetable matter adds greatly to the beneficial effects of lime; and hence are desirous of mingling as much barn-yard manure as possible with their lime dressings, and to get their fields into what is called a good sod or turf, full of grass roots. Then a dressing of lime has an admirable

effect. Dr. D. says further, that soils which have a natural growth of blackoak, walnut, and poplar, and those in which such grasses as the *poas* and *festucas* best flourish, are, generally, most signally benefited by the use of lime. It is found, however, in that section, more or less beneficial on every description of soil, but most so on hilly or rolling land where clay predominates.

(It is a matter of surprise to what degree opinion has varied as to the quantity to be applied per acre. In England and Scotland the practice has differed from one hundred to four and five hundred bushels. The larger quantities doubtless are only admissible on very heavy loams, and in connection with heavy manuring. In this country the best experience does not justify an application, on medium soils, of more than forty to fifty bushels to a first dressing. On light and thin soils with little vegetable matter twenty-five to thirty bushels may be quite enough. Such dressing may be repeated advantageously after four or five years, and even increased, as the supply of turf or other vegetable matter shall increase. The prevailing practice in some of the most experienced liming districts, is to plough down the sod in the fall or early in the spring, harrow at once, and then spread the lime, previously slaked to a powder, preparatory to planting the field in Indian corn. Every field in rotation receives this kind of dressing, and it is repeated every time it comes round for corn. If the rotation embraces six or seven years, some farmers make an intermediate application on the sod, and find material advantage in it. Indeed the method of applying on the sod, and allowing it to lie a year or two before being ploughed, is much preferred by many. When used in this way, it is commonly put on in the fall—say in the month of November.)

CATALOGUE.—Ellwanger & Barry's Descriptive Catalogue of Ornamental Trees and Shrubs, Roses, Flowering Plants, &c., for 1867-8. This catalogue has handsome illustrations of the best ornamental trees, plants, &c., a very good feature for those who want to buy but are not familiar with the sorts most desirable. Apply to Ellwanger & Barry, Mount Hope Nurseries, Rochester.

MECHANICS' AND AGRICULTURAL FAIR ASSOCIATION OF LOUISIANA.—Owing to the continued prevalence of the epidemic, the direction has unanimously resolved to postpone the opening of the coming fair until Tuesday, January 7th, 1868; the exhibition to continue for eight days.

NORTH CAROLINA, October 17th, 1867.

Editors of the American Farmer:

The great derangement in labor and the low price of cotton makes me feel the necessity of pursuing some other kind of agriculture than that of making cotton, and knowing but little about the "rotation of crop system," or as it is, I think, sometimes called, the "five field system," I wish you to publish an article explaining fully this, or these systems. I wish to learn how to make wheat, clover, corn, &c.

Respectfully,

SUBSCRIBER.

In compliance with the above, and believing there are many others who want the information our friend asks for, being in like circumstances, we reproduce an editorial heretofore published.

—EDITOR FARMER.

Arrangements of Fields for Cultivation.

With the necessity we are under of limiting our cultivated crops to smaller areas, will arise questions as to new arrangements of our lands, or new systems of rotation. This will be especially the case with those who find themselves obliged to re-fence their land.

The heavy cost of fencing will compel the utmost economy in that respect, and it will be matter for consideration how far fences may be dispensed with, where we have found it convenient to have them before. This will involve the consideration of field arrangement. Let us say in passing, as to this matter of fences, that we hope old habits will not so far prevail as to make them necessary where they are really not so, and that every one will make a point of incurring the least possible expense on this account. We are sure that, in a great many cases, where it has been thought necessary to fence three or four or five or seven fields, that a standing pasture fenced off may answer every purpose, aided by a small lot near the stables, and that one enclosure may protect all the arable land. But we started to speak of the matter of rotation. We propose to call attention to several familiar ones, that those interested may compare them, and exercise their discretion in the application of them to their own circumstances.

SEVEN FIELDS.

The first of these which we may notice, is the system long in use in some of the best farmed counties in Pennsylvania, and to some extent practiced in the northern portions of Maryland. It does not make permanent grass lands, but gives several years to grass of each of the divisions of land, and gives one to corn, one to oats, and one or two to wheat, as more or less grain

or grass may be desired. The system may be applied to divisions of land ever so small, and there is no necessity, however desirable in some respects it may be, to have them separated by inside fences.

Supposing the rotation to begin with corn, a cleansing crop, it is followed by oats, which has the same effect in that respect as the corn crop, though not hoed. It makes a dense shade at midsummer, calculated to check the growth of weeds, and the stubble being shortly after ploughed, it has all the effect of a hoe crop, and with the previous corn crop, combines to leave the ground in the best condition for grass seeds. The common practice manures this oat stubble, at midsummer, with the contents of the farm yard, and an admirable foundation is laid for a good crop of wheat, and of grass following.

Whether clover seed alone, or timothy or other grass seeds, be now sown, depends upon whether one or two crops of wheat are to be taken from the course. If two crops, then clover seed only will be sown the following spring. From this sowing, a crop of clover hay will be taken the next year, and a fallow prepared for wheat the coming fall. Upon this wheat is sown timothy, or other grass seeds, to stand as many years as experience, or the previous arrangements of the farm, may indicate to be desirable. If there be seven divisions, there will be three crops of grass. On such a farm, stock is fed, either for the dairy or the butcher, or for both, to some extent. It is a system which accords with what seems to be the soundest agricultural theory, and from which we should expect the best results. It makes variety in the crops; gives the soil the benefit of the preserving effects of a long standing sod; devotes full half of the period of rotation to what is considered ameliorating treatment, and returns not only the coarser products to the soil, but feeds at home a large proportion of the grain.

FOUR FIELDS.

While we can but commend the system above spoken of, yet, when we compare it practically with one common to many portions of Maryland and Virginia, which seems to violate favorite theories of culture, we have no facts on which the latter can be condemned. On the contrary, we have seen lands grow fertile, and farmers grow rich, where, three years out of four, heavy grain crops were taken from the ground, and of the fourth year, not more than four months were given to improvement; where no sod was allowed to protect the soil; and where the grain was all sold year by year, no manures purchased but a little plaster, and nothing returned to it but

the straw and fodder of the grain crops. This is the famous four-field system, which is peculiar to clover-growing districts. It begins with the Indian corn, the most scourging crop known to our agriculture, which requires us to keep the land bare, and exposed to the heats of the summer, while, with its greedy and all-pervading system of roots, it searches every inch of the soil and appropriates the most valuable of its elements.

After this comes a crop of wheat. Since the introduction of guano and kindred fertilizers, they have been used to an enormous extent upon this crop, and on lands which could not profitably be cultivated on this plan, it is now found to be a good one, so far at least as present profits are concerned. The fertilizer gives an impetus to the young clover, which is always sown at this point of the rotation, and on it is based the success of the whole. The use of guano, or other fertilizer, has never, however, been deemed essential in those districts to which the system was peculiar; the clover, and about two bushels of plaster to the acre in four years, included all the external aid given, except in certain sections, as on large portions of the Eastern Shore of Maryland, where plaster seemed to produce no effect, but marl, or lime in some form, took its place in ensuring a good growth of clover.

The third year of the rotation, the clover sown the year previous attains perfection in June, and in August the field is turned for the great crop, wheat on clover fallow. No other mode of preparation for a wheat crop can compare with this when we consider its cheapness and results. That which is taken after the exhausting corn crop is only justified, when guano is not used, by the trifling cost of putting it in the ground. Many farmers sow with the drill, immediately after cutting off the corn, without ploughing at all, and maintain that this is the best practice. But after a well managed clover field, there is every element of success. Its dense growth has smothered out the blue grass, and every native plant which might interfere with the wheat; the close shade and moisture, with the summer heats, have thoroughly rotted the dead vegetable matter on the surface, and made manure of that which would have been hurtful to the growth of the young plants; its broad leaves, spreading themselves in the atmosphere, have gathered its floating wealth, while its long tap-roots have struck down into the subsoil, far below the range of the fibrous rooted wheat plants, and brought to the surface the mineral stores hid there. This, then, is the opportunity for a profitable growth of grain, and the farmer bestows upon it his ut-

most attention. The best practice is to break it early in August, and let it be till late in September, or early in October, when the surface only is again stirred, and the seed sown.

This crop closes the rotation. It is sown without grass seeds, and the following year the corn crop comes in again. The custom is to give all the manure to this crop, and the common practice is to begin immediately after harvest to haul out and spread upon the surface all the material, of whatever kind, and however rough and coarse. The higher points of the fields, and the thinner portions, are dressed first, and heavily, leaving the valleys to their own strength, and, the washings from above. This covering with the remains of two crops of wheat and one of corn, the product of three-fourths of the arable land, together with the decaying stems of the great growth of rag weed, which always follows the fallow wheat, fortifies the soil with an amount of vegetable remains, that amply compensates the absence of the sod, and insures a heavy crop of corn.

As we said in the beginning, a system which takes away three exhausting grain crops in four years, is at variance with our established theories, but facts in agriculture are of more weight than theories, and this rotation has stood the test of practice for forty years, yielding heavy crops, and maintaining the fertility of the soil.

Book Table.

THE SOUTHERN EDUCATIONAL RECORD.—This is the first number of an educational quarterly issued from the well known publishing house of Richardson & Co., 14 Bond street, New York, and devoted to the interest of education in the South. Twenty-five cents per annum. This number has—*Education at the South—Its Aspect, Prospect and Requirements—Russian America—Its Physical Geography*, by M. F. Maury, LL.D., and other articles of much value and interest. The "Record" promises well for a useful career.

WESTMINSTER REVIEW, October, 1867. From the Leonard Scott Publishing House, 140 Fulton street, New York.—Contents, Polygamy and Monogamy in Turkey—The Apostles Creed—M. Louis Blanc's Letters on England—Lloyd's Sweden and its Game Birds—Dualism in Austria—La Bruyère; his Life and Works—Democracy—Russia—Contemporary Literature.

DE BOW'S REVIEW for November maintains the very high reputation of this standard southern publication. Price, \$6 per annum. Principal offices Nashville, and 80 Broadway, New York.

JOURNAL OF THE FARM.—This is an issue by the firm of Baugh & Sons, the object of which, with becoming frankness, they say, is to make more generally known, and thereby increase the sale of *Baugh's Raw Bone Phosphate*. The agricultural matter of the journal is of good quality, and it will no doubt serve a double purpose of diffusing much useful information, and extend the use of a fertilizer already widely known and of acknowledged value. Address, Baugh & Sons, Philadelphia.

AMERICAN STOCK JOURNAL.—As the only journal devoted to stock growing especially, this should have very large circulation. The proprietors have secured the services of "one of the ablest and most experienced veterinary surgeons in the Union, to answer gratis, through the journal, all questions relating to sick, injured or diseased horses, cattle, sheep, &c. Price \$1 per year. Address, N. P. Boyer & Co., Gum Tree, Chester county, Pa.

THE AMERICAN NATURALIST—A Popular Illustrated Magazine of Natural History. Terms \$3 a year. Address editors of the American Naturalist, Essex Institute, Salem, Mass.—This monthly has in its November issue, with its usual valuable matter, the able and interesting annual address of the President of the American Association for the Advancement of Science. Subject: "Modern Scientific Investigation; Its Methods and Tendencies."

THE CHEMICAL NEWS and Journal of Physical Science, devoted to Practical Chemistry as applied to Pharmacy, Medicine, Manufactures and Arts.—This is an American reprint of the London issue, the price of which in London is \$12, while that of the reprint is \$2. No one having any special interest in physical science should be without it. Address, W. A. Townsend & Adams, 434 Brome street, New York.

FIRST EXHIBITION OF THE AMERICAN POULTRY SOCIETY, at Masonic Hall Lecture Room, 112 East 13th street, (near 4th avenue,) New York, commencing Tuesday, December 3d, at 2 P. M., and closing Friday, December 6th, at 10 P. M.

Just now the Kerry cattle are commended, because they thrive in cold climates and on little food, and give such rich milk. In England a Kerry cow is valued at six hundred and fifty dollars. It is suspicious that fancy stock is always scarce.

Destruction of Insects—Cresylic Acid.

BALTIMORE, NOV. 15, 1867.

Editor American Farmer:

Did it ever strike you to observe that there is no one fact so often adverted to, and in so hopeless a tone, as that of the annoyance and destruction occasioned to farmer and gardener by insect life?

Take your last issue, Nov., 1867—

On the first page—"Potatoes have rotted badly." Why? Insect or fungus?

Page 130—"Are our farmers not having fear of the fly before their eyes," &c.—"Security against fly"—"Fly-proof,"

Page 132—"If slugs attack the plants," &c. And so on, in almost every number of every agricultural and horticultural journal.

The wheat fly, cut and wire-worms, cotton caterpillar, weevil, curculio, canker-worm, rose-bug, aphides, &c., on plants; the scab and foot-rot insects, ticks and lice on sheep; other lice on hogs and young cattle; flies during summer in stable and dairy; bed-bugs, moths, fleas, ants, cockroaches, &c., about the house—what a list can be made out!

And don't you think we are wrong in turning our attention solely to the destruction of the individual pest, instead of rendering the plant or locality obnoxious to the parent insect itself?

How is the egg or the larva of the wheat fly to be reached after the egg is once deposited?

What is to be gained by picking off or clipping in two, millions upon millions of cotton-worms; or of burning untold numbers of the moths, if your neighbors, any or one in fifty, neglect doing the same?

Some may thus be kept under, as the tobacco worm or rose-bug. But not so, the great proportion of those pests.

The scab or foot-rot may be cured in the individuals of a flock. But if not at same time removed to a range which has not become infested by the pests, the flock will be as bad as ever again in a short time.

Sheep and hogs are rarely ever free from insects, and suffer far beyond what is generally supposed, and especially when penned. Take a good glass and examine! And so with young cattle and colts. When at large, in good plight and in full health, and where the hogs can wallow, they are less afflicted; but never altogether clean.

To kill off the flies which literally torment horses and cattle in stables, and everywhere, during warm and even warmish weather, would be impossible.

So with the bed-bugs, fleas, little pests of ants, cockroaches, &c.

But, I have recently found a means of rendering any locality so obnoxious to almost all insect life (and equally destructive to all minute fungi) that I should be glad to see others benefit by the same means.

You are aware that coal-tar or gas-tar has been, of late years, found to yield many valuable products, in the hands of the chemist.

The most valuable of these is a group of acids (so called, though in reality alcohols) until quite lately looked upon as one, and known as *carbolic acid*. Further analysis shows that there are, in fact, several, forming the group. The two principal being *carbolic* and *creosylic*. Both of these prove to be most powerful anti-septics and disinfectants, and more obnoxious to all insects, and directly destructive of their life and of minute fungi, than any other known substances. And the *creosylic* more so than the other. But, unfortunately, neither will combine with water; with which they can only be mixed mechanically. So that, when a mixture with water was sprinkled over the cotton-plant, the acid clung to the leaves, whilst the water ran off the surface; and although every worm that came in contact with the acid died, the leaves, too, were scorched and perished! The acid, too, soon evaporated, thus exposed.

I was fortunate enough to have brought from England, a moderate quantity of a very crude *carbolic* soft-soap, used there and successfully for the cure of scab in sheep. Amongst numerous other experiments I tried during the summer, on various little pests, as red-bugs, cow-itch or chigger, fleas, ants, bed-bugs, &c., and with perfect success in every case, I tried a solution sprinkled over a piece of cotton after the worm had made its appearance. The solution spread freely over and clung to the leaf; the acid in this combination did not evaporate for days. And although the worms already on the plants nearly all matured, not another egg was laid by the parent moth, on the plants thus treated! That is all we want; all we need in almost any case.

I don't think I need enlarge upon these hints to the farmers of the present day. They are nearly all in the habit of reading and of thinking—thanks more to the *American Farmer*, in its long and most useful career, than to any other living journal.

Wash the stems of the trees and vines; the bodies of cattle and horses, hogs, &c.; the floors, the cupboards and the bedsteads with this soap; sprinkle the trees and growing plants with a solution at the season the parent seeks to propagate

her progeny; combine the acid with the manures drilled from the crops; scatter it in some combination over the seed-bed, and in my belief it will be found that nearly every known insect will be baffled thereby.

I am inclined to think, too, that the experiment of coating potato sets with some powdery combination of the acid, repelling and destroying, as it does, all fungus life, is one worth trying, to test its effect, if any, upon the lot.

It would be no serious matter to go over a field of wheat threatened with the fly, and sprinkle a solution from a common street watering cart. And the cost would or should be trifling, as the compound is a cheap one, a few pounds going a long way.

Yours,

T. A.

The Harvest of 1867 Throughout the World.

We have before us a mass of agricultural statistics and reports, of more or less reliability, concerning the harvest of the present year in Great Britain, Europe, Canada, and South America, which we have collated and digested with some care, in order that we might give to our readers, in a few words, the result of many hours' labor. In our own country we all know that the harvest has been plenteous; the wheat crop being as large as it ever has been, the corn crop larger than it has been since 1861, and the other grains and cereals having yielded well. This is the result when the entire country is taken as a whole. In the British Isles the weather this season has been unusually variable. There has been much more rain than has fallen for many previous years. The government there makes no returns of the result of the harvest; but the *London Times* has for many years employed a number of practical agricultural experts as its correspondents in various parts of the Kingdom, and their reports are generally found to be tolerably reliable. The reports of five of these correspondents are before us, and the substance thereof is, that the wheat crop of England and Scotland together will be below the average. In Scotland and the north of England the harvest is fully three or four weeks later than usual, and the weather, as a whole, has been decidedly unfavorable for bringing the crop to maturity. The quantity of grain throughout the Kingdom, according to these correspondents, will be smaller than usual, and the quality of it will be inferior. There is a great yield of straw, but a deficiency of grain; but the crops of oats and barley throughout England, Scotland, Ireland, and Wales are very large and very fine. The potato

crop in the Kingdom is said to be in a critical condition. The potato disease appeared early in the season in the south and west of England, and more lately, owing to the prevalence of rain, it has made considerable progress in Scotland and the north of England. It is feared that the potato crop, as a whole, will not be more than one-half of its usual quantity; and this deficiency will increase the demand for wheat, barley, and oats.

The crops in France have not been at all good. The weather has been unfavorable, and there is a serious deficiency in grain and roots. The grain crop of Germany has been good, but the potato disease has also prevailed there, and the crops will be deficient from one-third to one-half. The grain crops of Belgium, Portugal, and Spain are deficient. Switzerland never raises grain enough for her own consumption, but this year the usual deficiency seems to have been increased. Italy, unlike England, has suffered from long continued drouth, instead of an excess of rains, and her grain crop is more than usually short. Algeria, Tunis, and Morocco are in the same conditions. But, on the other hand, Russia, Turkey, Austria, and the Danubian Principalities have excellent wheat crops this year; the harvest in more than half the South American States has been good; and of Mexico, notwithstanding her troubles, it is reported that she has raised grain enough to supply her own population. To summarize the practical bearing of the above facts, in the plainest manner, it may be sufficient to say that the countries which will be compelled to buy breadstuffs between the present time and the next harvest are Great Britain, France, Belgium, Portugal, Spain, Switzerland, Italy, Algeria, Tunis, and Morocco; while the countries which will have grain to sell are the United States, Canada, Chili, and some of the other South American States, Russia, Turkey, and the Danubian Principalities.

The stocks of old wheat in Great Britain and France have not been so low since 1854 as they are at this time. Large purchases of wheat have been for some time past made on French account in the Eastern ports. The French Government has intimated to its citizens that large purchases of breadstuffs would be expedient. For many years past the imports of wheat into Great Britain have steadily increased. This has been owing to the increase of the population, the improvement in the rate of wages, and the more liberal expenditure of the people; and to these causes is now added the necessity of supplying the deficiency caused by the partial failure of this year's

crop. The following are the amounts of wheat imported into Great Britain since 1845, taking periods of five years together:

From 1846 to 1850.....	10,523,867 quarters.
From 1851 to 1855.....	23,415,726 "
From 1856 to 1860.....	26,896,936 "
From 1861 to 1865.....	39,908,391 "

The average price of British wheat for the week ending 7th September was 62s. 5d. per quarter; but for the corresponding week in the years 1863 to 1866, inclusive, the prices were respectively 44s. 2d, 42s. 3d. and 47s. 3d. per quarter. The present high price of wheat in England is drawing large supplies thither—and for the first eight months of the present year the imports there were about 5,000,000cwt, in excess of last year.

At what Depth Shall we Place our Manure.

The question whether manure shall be deeply ploughed under, or used in the manner known as "surface manuring," is again occupying the attention of farmers. None of the discussions which we have seen seem to us to present the main features of *both* sides of this question, and yet both observation and experience lead us to conclude that our practice in this respect must vary with the varying requirements of the soil and the crops.

Surface manuring, when applied to grass lands, is of great benefit, but it alone will not enable us to carry out the highest culture. Of course, the amount of plant-food supplied to any given crop, for a given amount of manure, is the same under both systems. The peculiar advantages accruing from surface manuring seem to us to be these: The soil is rendered so open and porous on the surface, that the collar of the plant is not as high as in the case of hard, compact surface-soil. Any one may verify this for himself, by examining the grass by the roadside, where the ground is somewhat trodden, and comparing it with similar grass growing in soil of which the surface consists of fine black mould. In the one case, the plants grow *in* the ground; in the other, they grow *on* it. Hence, during winter, grass which has been well top-dressed is enabled to withstand the frost much better than grass growing in soil with a hard surface, while a second advantage, of almost equal importance, lies in the fact that, although cattle and sheep crop it quite as closely to the surface of the ground, yet in reality the plant is not as closely cropped, and consequently it is not so liable to injury. Every farmer knows that a plant, especially a clover plant, grazed at or below the collar, is seriously injured, if not killed. Thus far, then, the advantage lies wholly

with top-dressing: and were the mere supply of food, and protection of the plant, the only points to be considered, we need never adopt any other. But there is another point which equally demands attention, and this is depth of soil. No heavy crops of grass or grain can ever be had without deep soil; and deep soil is to be obtained, in the first instance, only by burying manure and good soil at a proper depth. In our judgment, one of the most important problems now before the American farmer is—how to obtain depth of soil? We are no believers in pet theories and special nostrums, and yet we cannot help feeling that upon a proper solution of this problem depends much of our future agricultural prosperity.

To make ground deep it must be deeply stirred; and if we would derive any benefit from deep stirring, we must make it deeply rich. Microscopic applications of manure will be of no avail in our efforts to affect this. The supply must be ample, and then, if the after management be judicious, the soil will be made deep and rich, not for one season but for many.

In deciding upon the benefit to be derived from the application of manure at different depths, we think that experiments performed upon a wheat crop will prove of little value for our guidance in regard to forage crops. The wheat crop has peculiar requirements beyond the mere supply of nutrition, and these requirements have been strangely overlooked in most of the investigations connected with its growth; while a careful consideration of them will, we think, throw much light on many of the discordant results announced by Liebig, Lawes, Gilbert, and others.

We were not a little surprised to notice, in a recent number, the remark of a correspondent, that the seeds of grass would require months to reach manure buried at a depth of two or three inches. Surely, either this statement is not based upon actual observation of the facts, or the soil must have been of a most impervious character. Our own observations on clover, timothy, and some other grasses, do not agree with this.

So, too, in regard to moisture. Your correspondent seems to intimate that grass growing with its roots near the surface will receive more benefit from the rain than grass whose roots descend to a greater depth. He forgets, however, that it is not *during rain* that plants need moisture most, but during dry weather, and then none but deeply rooted plants can stand the drought. Every intelligent cultivator assents to the truth of the somewhat paradoxical statement, that, while draining lessens the amount of moisture in the soil, it increases the amount which is

available to the plant. This it does by increasing the space through which the roots can extend virtually by furnishing the plant with more mouth for the absorption of fluid.

We feel no hesitation, then, in saying that he who would secure heavy crops of forage must, first of all, put his manure in deeply, and thus make his land deep and rich. *Afterwards*, by far the most economical mode of application will be by top-dressing.—*ARATOR, in Country Gentleman.*

Fall Ploughing

MORALLY, man is said to require "Line upon line and precept upon precept," and not less does the farmer require his attention to be called, in season and out of season, to his duty of thoroughly preparing his soil for the future crop. The frost of winter works wonders upon a stubborn clay soil when turned up in the autumn. No implement, hand or horse, can so thoroughly disintegrate it; besides, it sweetens and purifies the soil from unfavorable acids, and thus enables the farmer to plough his land deeper than in spring. Every farmer, especially one who owns heavy land, should endeavor, gradually, to deepen his surface soil from six to twelve inches. And the fall is the true time to do this. Some years since we ploughed in the fall a piece of heavy clay ten inches deep, which had previously been ploughed only five or six inches, turning up four inches of a light colored clay, never before disturbed. Neighbors, who saw the field in spring, thought it useless to sow any grain upon it, as it would require several years seasoning before any would grow. Regardless of these prophecies, we drilled in two and a-half bushels per acre, and had a yield of forty-five bushels per acre through the field of ten acres.

An excellent way to plough deep in fall, on land too heavy for one team, is to use two teams and two ploughs. Let the first plough turn six inches and the second four inches from the bottom of the first furrow, leaving it on top of the first. This leaves the last four inches in looser condition and more favorable for the action of frost. The second plough should, to work easy, be a little narrower than the first. This is undoubtedly better than to turn the ten inches with one plough, and would perhaps, pay the extra expense.

Another important feature of fall ploughing is, that it destroys many insects and noxious weeds. By reversing the roots of weeds and exposing insects to the frosts they are destroyed to a large extent. Then, it is done at a season of

comparative leisure with the farmer, making it much less expensive. Besides, the crop may be sown in spring from two to four weeks earlier than on spring ploughing. This is so important that it often saves a crop which would otherwise be lost. And more, the crop will average a fourth better with fall than spring ploughing on clay land. Light sandy soils are not benefited by fall ploughing, as they are loose enough without frost. When practicable, fall ploughed land should be sown to spring grain when the frost is out of the surface sufficiently to cover the seed, with the frost still remaining under—which on coming out will leave the soil very loose; and to this loose and pulverulent condition of the soil is owing the larger crop realized on fall ploughed land. It is also allowable to plough clay land wetter in fall than in spring, as the frost will mellow it. This is also a gain, for the work may be done late in the fall, just before winter sets in. But early fall ploughing is preferred. Fall ploughing makes all the difference between profitable and unprofitable farming.—*E. W. S. in the Rural N. Yorker.*

Hay Tedders.

A correspondent of the Co. GENT. Oct. 3d, expresses the opinion that the Hay Tedder is not sufficiently appreciated. In this I fully agree with him. Having a large crop of hay to secure the past season, and believing in the use of improved and labor-saving implements, I determined to test the value of the tedder. After getting what information I could, and examining different patterns in the market, I purchased "Garfield's," manufactured by the Ames Plow Co., which they have exhibited at the Fairs this fall; on which, they informed me, they had expended \$20,000 in perfecting. After cutting with the machine, we started the tedder, which turned up the grass, and left it lying up light so that the sun and air could act upon the whole. This made the labor of raking very easy. In a good day, by repeating the process two or three times, the hay would be made sufficiently dry to go into the barn. It turned hay, spread from the cock or winrow with great rapidity, and much better than by hand. One advantage of this tedder is that the hay is not raised more than eighteen inches from the ground; and, should the wind blow, it is not scattered where it is not wanted. I have never used an implement with better satisfaction. It is of easy draught for one horse. It performs its work better and much quicker than by hand. In *catching* weather, as in the past season, there is less risk from damage. In curing second crop,

its services are invaluable. Every one knows the difficulty of getting it sufficiently cured. Hay dealers inform me, that since the advent of mowing machines, the quality of the hay is not so good as formerly. The grass lying flat, the top is made too much, while the bottom remains green. This is remedied by the tedder, as it is mixed indiscriminately, giving all parts an equal opportunity to make. In my opinion the day is not far distant when the tedder will be as generally used as the mowing machine.—*W. BROWN, in Country Gentleman.*

Comparative Value of Hay, Corn and Roots.

I wish briefly to draw the attention of our farmers to the value of hay when compared with other crops which are or may be raised by them.

An acre of ground retained expressly for hay yields on an average not more than one and one-half tons of vegetable food; an equal space planted with carrots or ruta bagas will yield from ten to twenty tons, say fifteen tons, which is by no means a high average, and has often been attained without any extraordinary cultivation. It has been ascertained by careful experiment, that three working horses, fifteen and one-half hands high, consume hay at the rate of two hundred and twenty-four pounds per week, or five tons and one thousand and forty-eight pounds per annum. By a repetition of the same experiment it was found that an unworked horse consumed hay at the rate of four and one-quarter tons per annum.

The produce, therefore, of nearly six acres of land is necessary to support a working horse for one year; but half an acre of carrots at six hundred bushels per acre, with the addition of chopped straw, while the season for feeding them lasts, will do as well if not better. These things do not admit of doubt, for they have been the subject of exact trials, as some of your agricultural friends can testify.

It has also been proved that the value of one bushel of corn, together with the fodder upon which it grew, will keep a horse in good working order for a week. An acre planted with corn, and yielding sixty bushels, will be ample to keep a good-seized horse in working order for one year.

Let the farmer then consider whether it is better to maintain a horse on the produce of half an acre ruta bagas or carrots, or upon the produce of an acre of corn; or, on the other hand, upon the hay and grain from six acres of land—for it will require six acres of good land to produce the necessary hay and grain as above.

The same reason might be made use of in the feeding of cattle and sheep.

These facts deserve the particular attention of farmers who are desirous of improving their pecuniary condition. I am aware that labor of a proper kind is in many cases difficult to procure, and with our habits is not very easily managed. I know also that a large portion of our farmers, from the nature of their habits and their style of living, are so prosperous and independent that they have no occasion to extend their cultivation beyond what it now is, in order to meet their wants; and to incur the trouble, vexation and risk of employing more labor, expending more capital, and increasing their cares.

But it is not fair to produce such instances as any examples of the profit or unprofitableness of farming, when carried on as all other branches of business, to be successful must be carried on with skill, intelligence, industry, enterprise and all the capital and all the labor which can be bestowed upon them with advantage.

To carry on farming in the most successful manner, the farmer should have the control of capital equal in amount to one year's crops and one year's manure, or he must work to a greater or less disadvantage in proportion as the amount of his capital falls below this mark.—*German town Telegraph*.

The Colorado potato Bug.

But little need be said by way of descriptions, as it has unfortunately rendered itself familiar to every eye that glances over a patch of potatoes, either in the garden or the field. It is a yellow, striped bug, about three-eighths of an inch in length, and one-fourth of an inch broad. It conceals itself in the ground, on the first appearance of cold weather in autumn, and remains there during the winter, spring, or coincident with the vigorous growth of that vegetation on which it feeds, and especially of potatoes, of which it is particularly fond. It is a dull, slug-gish creature, both as a slug and as a bug, but is a most voracious and persistent eater. Soon after its appearance in spring, its eggs may be seen on the tender leaves of the plant on which it feeds; a yellowish cluster not unlike, in color, the pollen on the potato flower. In a short time these eggs hatch, and a small, dark looking object appears, which rapidly grows into a grey, disgusting looking slug, in time soon becomes the bug already described. Left unmolested they multiply so rapidly and eat so voraciously, that the potato field is soon stripped of its leaves and presents only a sightless array of naked stalks.

Remedy.—When they make their appearance in spring on a field of potatoes there is but one alternative—the one suggested by a military officer to his men, pointing to his approaching foe, he says, "There men, is the enemy, if you don't kill them they will kill you."

We say to the farmer, there is the enemy, either they or the potatoes must be destroyed. To do this the only way we have found is to pick them off by hand, or what is better take a broad, tin milk pan in the left hand, and a short stick in the right hand. Place the pan on one side of the hill and under the vines, and with the stick bend the tops gently over the pan with a jar, which the bugs and slugs will drop and be gathered into the pan, and may be committed to the flames, or crushed. If any eggs are seen upon the leaves, always, as you go along brush them with the thumb and finger, or pinch off the leaf, eggs and all, and commit them to the flames with the parents. By paying the children a small bonus per quart, or per hundred, they will keep an acre of potatoes comparatively clear. Always remember that it is much easier to destroy one bug in early spring, than to fight her a month later with her ten thousand children, and great, grand children.

The ordinary farm fowls will not eat them. Perhaps though by instinct they are taught to let them alone, as it is more than probable that they are poisonous. We are told that sometimes turkeys will eat them, but we are not sufficiently advised on this point to credit it. Those which are habitually kept up, if turned loose for an hour, might be the best to try with.

We believe the best safeguard against them is fall ploughing of the potato field, after they have burrowed for the winter, and have become too torpid to get down again. To expose them to constant freezing and thawing of the late autumn and winter is most potent. The reason for this will be given in some general remarks at the close of this article.

We have known a piece of ground which for other reasons had been ploughed late in autumn, yield a fine crop of potatoes the next season almost entirely exempt from bugs, while they were roving all around the adjoining fields. And yet, the first year after such fall ploughing was neglected, the crop was entirely overrun and almost worthless.—*Exchange*.

SALT WITH WHEAT.—It is said that salt, sown with wheat, adds stiffness to the straw, prevents rust, and causes it to ripen much easier.

Bottled Cider.

The *Farmer and Mirror* advises bottling cider, and gives the following directions. There is already some cider made in Iowa, and the information here given may interest some of our readers:

Cider is so scarce, it will be economy to bottle it, as it will spend better, and keep as long as you please. For bottling let the pumice lie in the trough over night. The first run of the cider from the press is the best. Let the cider work a day or two,—the casks being full, so that the pumice may pass off at the bung-hole. Then take an empty cask, clean and sweet, put into it ten or twelve gallons of cider, thrust into the cask, through the bung-hole, an ignited rag-sulphur-match, suspended by a wire from the bung, to which it is to be attached; and after this another, and so on, till three or four matches have been consumed. Then shake the cask violently, until the fumes of the sulphur are completely incorporated with the cider. Pour the cider thus prepared into the cask in which you propose to keep it for the winter. Repeat the same process until the cask is full. Bung the cask tight, and let it remain in the cellar till March, and then draw the cider off and bottle it. Place the bottles upon the bottom of the cellar, and cover with sand. Some place the bottles bottom up, or in a trench betwixt two bits of joist, as in this way the corks will remain secure without twine or wire.

In this way you can have the best of bottled cider, and an article that commands a good price, either for sickness or the table.

In this manner the "Shaker cider" is made, which is for draught, and will keep a long time.

If you don't care to bottle it, you can make excellent cider in this way: Take pure cider put it into clean casks; then after the cider has worked so as to be pleasant, add to each barrel a pint of mustard-seed, and bung tight. The cider will remain till spring of pleasant taste and sparkling appearance, when poured into a tumbler.

Cider is a very healthy beverage. Taken temperately, its action is good upon the system. It corrects the tone of the stomach and liver, passes off the bile, and thus is a preventive of jaundice, sick headache, ague and the like. That troublesome and often fatal disease, fever and ague, flees a country as apple orchards approach and multiply, as surely as the Indian retires before civilization.

Tobacco.

Latokia Tobacco.—Lately the attention of tobacco planters has been directed to this new variety; and a few weeks ago we published an article in which its valuable qualities were enumerated. The writer said, that, owing to its rapid growth, two crops can be raised annually, and that it is admirably adapted to the soil and climate of our State. In the *Rural American* we find a statement made by C. H. Barrows, of his experience with this tobacco, which we give our readers. There is no doubt but what this variety will be sowed to a considerable extent in this State, and if, after a fair trial, it is found to possess one-half of the desirable qualities claimed for it, it will prove an acquisition. Last winter I procured a package of *Latokia* tobacco seed, sowed it in a hot-bed and raised twenty-one plants. Transplanted in June, into rich, warm soil. They flourished finely, and formed handsome plants. Seed was my object; but, notwithstanding, they were allowed to bear all the seed set, except some of the latest side shoots, they had leaves twenty-seven by eighteen inches. It was so different from American tobacco, that very many inquired, "what are those plants with such large green leaves and yellow blossoms?" In regard to its adaptation to the climate of more Southern States, I think it is, as I had no trouble at all in getting a splendid lot of well-ripened seed in Connecticut. It is my opinion that it will grow side by side with American tobacco anywhere.—*Willimantic (Ct.) Paper.*

Fine Tobacco.—We learn that one crop of very fine tobacco, which will be exhibited at the Tobacco Fair in this city, was raised by Ben. Marshall, of this county. Mr. M. sold it for \$5000, about \$40 per hundred, with the privilege of exhibiting it at the Paducah Tobacco Fair. There will also be another crop exhibited, grown by Mr. Randall, of this county. The crop amounts to 15,000 pounds, six hundred pounds of which have been sold for a price that more than paid for the whole crop. Mr. R. still holds the remaining 14,400 pounds.—*Paducah Herald.*

Several capitalists of Dutchess county, N. Y., have recently purchased twelve hundred acres of land, on the Lake Shore railroad, between Dunkirk and Erie, for extensive vineyard planting. Germans from the Rhine districts are to be obtained as laborers.

Having been often told that anything would do for seed potatoes, a correspondent of the Rural New Yorker planted four rows of twenty hills each, in the centre of his field with the following result:

	Marketable.	Small.
1 large potato in a hill yielded.....	67	24
4 small potatoes in a hill yielded.....	63	37
4 cut potatoes in a hill yielded.....	61	37
8 eyes only in a hill yielded.....	74	134

Sunday Reading.

Prayer is the peace of our spirit, the stillness of our thoughts, the evenness of recollection, the seat of meditation, the rest of our cares, and the calm of our temper; prayer is the issue of a quiet mind, of untroubled thoughts; it is the daughter of charity, and the sister of meekness; and he that prays to God with an angry, that is with a troubled and discomposed spirit, is like him that retires into a battle to meditate, and sets up his closet in the out-quarters of an army. Anger is a perfect alienation of the mind from prayer, and therefore is contrary to that attention which presents our prayers in a right tone to God. For so have I seen a lark rising from his bed of grass, and soaring upwards, singing as he rises, and hopes to get to heaven and climb above the clouds; but the poor bird was beaten back with the loud sighings of an eastern wind, and his motion made irregular and unconstant, descending more at every breath of the tempest than it could recover by the liberation and frequent weighing of his wings, till the little creature was forced to sit down and pant, and stay till the storm was over, and then it made a prosperous flight, and did rise and sing as if it had learned music and motion from an angel, as he passed sometimes through the air about his ministries here below; so is the prayer of a good man. Prayers are but the body of the bird; desires are its angel's wings.

Recreation is a second creation when weariness hath almost annihilated one's spirits. It is the breathing of the soul which otherwise would be stifled with continual business. Spill not the morning (the quintessence of the day) in recreations; for sleep itself is a recreation. Add not therefore sauce to sauce. And he cannot properly have any title to be refreshed who was not first faint. Pastime, like wine, is poison in the morning. It is then good husbandry to sow the seed which hath lain fallow all night with some serious work. Let thy recreations be in-

genious and bear proportion to thine age. If thou sayest with Paul, "When I was a child I did as a child;" say also with him, "but when I was a man I put away childish things." Wear also the child's coat if thou likest his sports. Choke not thy soul with immoderate pouring in the cordial of pleasures. Profane they whose recreation lasts seven days every week.

Nor can I otherwise than esteem the ancient proverb as a very fine one, and one which we may gladly claim for our own, "Many meet the gods, but few salute them." How often do "the gods," according to the language of the proverb, "meet" men in the shape of a sorrow which might be a purifying one, of a joy which might elevate their hearts to thankfulness and praise; in a sickness or a recovery, a disappointment or a success; and yet how few, as it must be sadly owned, "salute them." How few recognize their august presence in their joy or their sorrow; this blessing added, or this blessing taken away. As this proverb has reference to man's failing to see the Divine presence, so is there a very grand French one which expresses the same truth under the image of a failing to hear the divine voices, those voices being drowned by the deafening hubbub of the world—"The noise is so great, one cannot hear God thunder."

The little trials of an ordinary career, the trials which involve nothing loftier or more sublime than the rubs and collisions of every-day life—the trials, in short, which range themselves under the heads of tongue and temper—make a larger demand upon our patience, and are perhaps a greater drain upon our fortitude and endurance than ever those in which God makes our flesh quiver with the tearing of the pincers of affliction. "Wolves and bears," says an ancient writer when giving a comparative estimate of great and small trials, "are without doubt more dangerous than flies; yet do they not vex and importune us so much, nor exercise our patience so often."

That the wicked have peace in themselves is no wonder; they are as sure as temptation can make them. No prince makes war with his own subjects. The godly are still enemies, therefore they must look to be assaulted both by stratagem and violence. Nothing shall more joy me than my inward unquietness. A just war is a thousand times more happy than an ill conditioned peace.

FOR SALE!

A full blood DURHAM BULL CALF—color, red, relieved with white—a splendid animal. Price up to 1st December, \$40, and \$2 advance on same, per week, from that date until sold.

R. SINCLAIR,
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Baltimore, Md.

Baltimore Markets, Nov. 23, 1867.

COFFEE.—Rio, 16a17½ cts. gold, according to quality;
Laguayra 17½a18 cts., and Java 24½a25 cts.

COTTON.—We quote prices as follows, viz:

Grades.	Upland.	Gulf.
Ordinary.....	15	—
Good do.....	16	—
Low Middling.....	16	—
Middling.....	17½	—

FERTILIZERS.—Peruvian Guano, \$80; California \$70.
Rodunda Island \$30; Patapeco Co's \$60; Reese & Co's
Soluble Pacific Guano, \$65; Flour of Bone, \$60; G.
Ober's (Kettlewells) AA Manipulated, \$70; A do. \$60;
Ammoniated Alkaline Phosphate, \$55; Alkaline Phos. \$45;
Baltimore City Company's Fertilizer, \$40; do., Flour of
Bone, \$60; do., Ground Bone, \$45; do., Foudrette, \$20;
Baugh's Raw-bone Phosphate, \$56; Maryland Powder of
Bone, \$50; Rhodes' Super Phosphate, \$55; Lister's Bone
Super-Phosphate \$55; Andrew Coe's Super-Phosphate of
Lime, \$60;—all per ton of 2,000 lbs.; Pure Ground Plas-
ter, \$13.50a\$14.00 per ton, or \$2 50 per bbl. Shell Lime
slaked, 6c., unslaked, 10c per bushel, at kilns.

Flour.—Howard Street Super and Cut Extra, \$9.50a
10.25; Family, \$12.50a13.00; City Mills Super, \$9.50a
10.00; Baltimore Family, \$14.50a15.00.

Rye Flour and Corn Meal.—Rye Flour, \$7.50; Corn
Meal, \$6.25.

GRAIN.—Wheat.—Good to prime Red, \$2 50a2.60;
White, \$2.60a2.60.

Rye.—\$1.50a1.60 per bushel.

Oats.—Heavy to light—ranging as to character from 70
a74c. per bushel.

Corn.—White, \$1 25a1.25; Yellow, \$1 25a1.28 per
bushel.

HAY AND STRAW.—Timothy \$20a22, and Rye Straw \$18
a\$20 per ton.

PROVISIONS.—Bacon.—Shoulders, 13 cts.; Sides 15½a
16 cts.; Hams, sugar cured, 18a19 cts. per lb.

SALT.—Liverpool Ground Alum, \$2.15a2.20; Fine, \$2 80
a\$3.10; Turk's Island, 55a56 cts. per bushel.

SEEDS.—Timothy \$2 50a2.75; Clover \$8.00; Flax 2.50.

TOBACCO.—We give the range of prices as follows:

Maryland.

Frosted to common.....	\$2 75a 3.00
Sound common.....	4.00a 4.50
Middling.....	7.50a 9.00
Good to fine brown.....	10.00a15.00
Fancy.....	17.00a25.00
Upper country.....	3.00a30.00
Ground leaves, new.....	3.50a13.00

Wool.—We quote: Unwashed, 22a23 cts. per lb.; Tub
washed, 30a35 cts.; Fleece 30a35 cts.; Pulled 22a28 cts.
per lb.

CATTLE MARKET.—Common, \$3.75a4.75; Good, \$3.50a
6.50; Prime Beeves, \$7.87 per 100 lbs.

Sheep—3½a5½ cts. lbs. gross.

Hogs—\$8.75a9.75 per 100 lbs., net.

Wholesale Produce Market.

Prepared for the American Farmer by HEWES & WARNER, Produce
and Commission Merchants, 18 Commerce street.

BALTIMORE, November 23, 1867.

BUTTER.—Western solid packed 25 to 35 and Rolled 30
to 38; Glades, 30 to 40; Goshen, 42 to 45.

BEESWAX.—38a40 cts.

CHEESE.—Eastern, 15½a17; Western, 14a15.

DRIED FRUIT.—Apples, 7 to 9; Peaches, 8a10.

EGGS.—32a36 cents per dozen.

FEATHERS.—Live Geese, 60 to 80 cents.

LARD.—Western, 13; City rendered, 14a16 cts.

TALLOW.—10a11 cents.

POTATOES.—80 cts.a\$1.30 per bushel.

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